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THE MANAGEMENT

OF

CHILDREN IN INDIA.



THE  
MANAGEMENT AND MEDICAL TREATMENT  
OF  
CHILDREN IN INDIA.

*SECOND EDITION,*

BEING THE EIGHTH EDITION OF GOODEVE'S "HINTS ON THE  
MANAGEMENT OF CHILDREN IN INDIA."

BY

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## PREFACE TO THE FIRST EDITION.

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TOWARDS the close of last year, Messrs. Thacker and Co., of London, did me the honour of requesting me to re-write “Goodeve’s Hints for the Management of Children in India.” I undertook the task, and the following pages represent my attempt.

It is almost needless to mention that the object of the book remains as heretofore—to instruct as to the rearing of children in India, and to enable the parent to meet the emergencies incidental to child-life in that country—and that it is in no way intended to supplant professional advice.

E. A. BIRCH.

WIESBADEN,  
*1st March, 1879.*

## PREFACE TO THE SECOND EDITION.

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ALL the practical parts have been carefully revised, a good deal of statistical details omitted, and some new subjects introduced. Professor D. B. Smith having been kind enough to go through the whole text, and Professor de Chaumont to look over the hygienic portions, their suggestions have been gratefully accepted ; and the volume is, therefore, issued with much increased confidence. An endeavour has also been made to profit by the suggestions of the reviewers of the former edition.

EDWARD A. BIRCH.

CASTLE PARK, EXMOUTH,  
*2nd September, 1886.*

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THE  
MANAGEMENT OF CHILDREN  
IN INDIA.

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PART I.

On the Management of the European Child  
in India, while in health.

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CHAPTER I.

INFANT MORTALITY IN INDIA,

AS INFLUENCED BY THE KIND OF MANAGEMENT TO WHICH  
THE CHILD IS SUBJECTED.

WHEN an individual becomes possessed of any piece of property, he will first consider what means he shall adopt to preserve it and to bring it to perfection ; but his energies and zeal will naturally be regulated by two considerations, viz., the value of the property, and the results which he believes are possible of attainment. Assuming the value of the object to be universally assessed at a high rate, it is sure to receive a certain amount of attention ; but its further treatment will wholly depend upon the opinion entertained by its possessor as to his power to preserve it and to increase its value. Should he believe that his

CHAP. I.

Introductory.

efforts are capable of effecting little, if any, change in the ultimate result, he will, unless he be almost more than human, devote but scanty time and attention to it. If, on the other hand, he is convinced that according to his management so will be the return yielded, his interest and his energies will be fully concentrated upon it. So that, after all, it comes to be a mere question of individual belief. This is precisely the situation of the European parent in India as regards his child's health and well-being. *That which the parents believe, will guide the management of their offspring.* Perchance it is conceived that no power for good or evil is possessed, that the details of daily life have little to do with health or delicacy, with living or dying, and that "climate" is responsible for all misfortunes. Whatever be the nature of individual opinions, certain it is that great ignorance prevails upon this subject. Some believe one thing and others the opposite; but each acts, it may be imperceptibly to himself, upon his convictions or conceptions. Each side has part of an argument to advance, and neither is convinced.

It being quite impossible to obtain an intelligent appreciation of the subject discussed in this book without the possession of clear ideas as to the effects of good, bad, and indifferent management upon European child-life in India, it becomes a necessary preliminary to investigate these points. In doing so it will not be difficult to demonstrate the frightful results of bad management on the one hand, and the extremely favourable results of good management on the other, in the hope that the knowledge will stimulate the energies of parents in the right direction.

convince them of the vast powers they possess, and of the great responsibilities they have incurred, as well as enlighten those who are sceptical of their own ability to influence events.

There is a vague impression abroad that the Prevalent belief. climate of India is extremely fatal to European child life. Paradoxical though it appear, it may be stated that such a belief is at once true and untrue; the mortality is enormously in excess of that which prevails in Europe, and it is lower than, or as low as, that of Europe.

The children of European soldiers in India are, few General mortality among soldiers' children. will deny, but indifferently cared for, in so far as the peculiarities of climate demand, notwithstanding the many efforts which are made to alleviate their condition. Without going too minutely into figures, it may be briefly stated that under five years of age the soldier's child dies in India at the rate of something like 140 per 1,000 of strength. Now the death-rate in England Compared with England. for this period of life is about 68 per 1,000, or less than one-half of the Indian rate; and under fifteen years it is about one-third. Dr. Townsend drew up a table some years ago, which exhibits the contrast very plainly. It is, however, only fair to state that later years exhibit better results.

		England, the mean of 29 years.	Bengal, Soldiers' Children, 1870.
Under 5 years	...	67.58	148.10
5 to 10 "	...	8.80	17.73
10 to 15 "	...	4.98	11.51

Nor can the comparison be stigmatised as being unfair; for although the management of the soldier's child may be characterized as indifferent, we have no approach to the actual bad management, the want, privation, and exposure to which multitudes of the children of the poor in England are subjected. A writer in the *Calcutta Review* (1866) observes, "The mortality among soldiers' children of pure European race more than trebles that frightful death-rate which prevails among the infants of the poor at home." The editor of the *British Medical Journal* (1878) thus contrasts the mortality of the soldier's child in India with that of children of the same age in London:—

Deaths per 1,000	...	Under 1 year	1 to 5 years.	5 to 16 years.	5 to 20 years.
India...	...	314	104	20	—
London	...	185	35	—	5

The statistics for the last two periods are not so arranged that comparison can be exactly made, but "it is at all events quite certain that soldiers' children in India, between 5 and 16 years of age, die with four times the rapidity which obtains among individuals varying between the ages of 5 and 20 in London."

It is a deplorable fact that the measures which have so vastly reduced the soldiers' death-rate have not effected the same for their children, as the following figures prove:—

Average death-rate of children per 1,000 per annum.

68.83 during 4 years (1851-54), Dr. H. Macpherson.
94.41 " 6 " (1864-69), Sanitary Commissioner.
94.58 " 5 " (1868-72), Dr. Bryden.

We must therefore look elsewhere than to general external sanitary conditions to account for the excessive rate at which soldiers' children die in India.

Viewing the mortality in relation to the birth-rate, Deaths to births. we find that in England about 15 per cent. of all infants born, die within the first year of life. There is but little evidence as regards soldiers' children in India in this particular, but the following may be quoted from the *Calcutta Review* of 1851 :—“Taking the returns of two regiments which reached India last year, we find that in one there have been born 44 children, of whom at the end of the fifteenth month there are only 29 surviving, showing a loss of 27 per cent. within the first year. In another regiment 52 children have been born within 14 months, of whom 32 have died within the same period, giving a ratio of mortality equal to 33 per cent. during the first 12 months of their Indian life. In another case, taking the children born in England or on board ship, who arrived with the regiment in India eight years ago, out of 159 (the original number) no less than 110 have perished. Of the remaining 49, how few in all probability will grow to manhood! Hence we see that whether we take 100 children imported from England, born of healthy parents, or 100 children born of the same parents within the first year of their arrival in India, still the melancholy fact remains the same.” The same writer quotes the following table, exhibiting the respective ages of the survivors of 261 children born in one regiment since landing in India eight years previously :—

From 7 to 8 years	...	...	4
„ 6 „ 7 „	...	...	8
„ 5 „ 6 „	...	...	13
„ 4 „ 5 „	...	...	15
„ 3 „ 4 „	...	...	20
„ 2 „ 3 „	...	...	15
Under 2 „	...	...	38

Died 148. Survivors 113. Total in 8 years 261.

It would be easy to multiply instances and to place the contrast more vividly before the reader, but only to draw a terrible picture would be unprofitable. Enough, however, has been said to show the dark side in a general way, admitting at the same time that later statistics exhibit better results. Happily there is a bright side.

The bright side.

Several years ago Dr. Macpherson undertook an investigation into the European infant mortality of Calcutta. His data were imperfect, yet he arrived at an inference the general correctness of which has since been verified. The following figures are recorded by him:—

Ages.	Calcutta. 1,568 Deaths.	European rate.
Under 1 year of age ...	54.7	55.7
1 to 2 years „ ...	23.9	20.2
2 „ 3 „ „ ...	10.6	11.2
3 „ 4 „ „ ...	5.4	7.4
4 „ 5 „ „ ...	5.19	5.2

European  
children in  
Calcutta.

and he then observed, "The table proves this much at least, that of all who die under five years the casualties at the earliest period are quite as few here as in Europe. The differences are trifling, and the results shown, if corroborated by further observation, would indicate that the season of teething is slightly

Macpherson's  
investiga-  
tions.

more trying to children in India, but before and after that period they thrive at least as well in India as in Europe up to five years." Dr. Payne has done an important service by placing on record facts which are no less startling than instructive, in that they conclusively demonstrate the results actually attained by good management. He shows that, "while in the native town of Calcutta,\* infants die as they die only in the most fatal countries, European infants, with 5.8 per cent. of deaths in the year, enjoy in Calcutta a degree of vitality which surpasses that of the most favoured spots elsewhere." Again, there is in Calcutta an institution named the European Female Orphan Asylum, of which Sir J. Fayerer has written a sanitary report for six years, commencing January, 1863. It seems that there was during that period an average of 65 inmates, varying in age from 1 to 18 years, the great proportion being between the ages of 5 and 16. "The abstracts of admission

\* Dr. McLeod tells us that of the total infant mortality in Calcutta in the year 1884, "55 per cent. of the deaths took place within 15 days of birth. This also is in accordance with the experience of preceding years. The tetanus, which accounts for so large a proportion of the casualties, occurs and runs its fatal course within a few days of birth. As regards sectional mortality, Burrabazar gives a ratio of 50 deaths among 100 living infants. The following sections show rates exceeding 40 and falling short of 50 per cent. :—Shampooer, Sukea's Street, Jorabagan, Jorasanko, Moocheepara, Cullingah. Among these, the sections Jorabagan and Jorasanko approach 50 per cent. very closely. The remaining sections are below 40. Taltollah approaches that rate very closely, and Waterloo Street indicates only 1 per cent. These results correspond with and confirm the statistics referring to race displayed in previous tables."

into hospital show that there has been a great immunity from epidemic disease of any severity; and the very low mortality (6 deaths in 6 years), as well as the small amount of sickness, prove that the European child, under proper hygienic conditions and careful physical training, may live and thrive in the plains of Bengal *almost* as well as in its native country." The Sanitary Commissioner with Government admits these facts as proof that, under favourable sanitary conditions, Indian climates are not necessarily so injurious to the health of European children as was formerly supposed; while Fayerer,

Sanitary com-  
missioner's  
opinion.

Fayerer's com-  
ment.

in commenting upon Dr. Payne's report, considers that up to 6 or 8 years of age European children "thrive, if anything, better than in England."

We need not travel so far as India to observe an immense difference in the infant death-rate. Dr. Farr finds that the infant mortality of European countries ranges from 41 per 1,000 in Norway to 113 per 1,000 in Italy. In the year 1860 the infant mortality (under one year) in England was 17, while in Scotland it was only 14½ per cent. In some mining districts of England 270 infants under one year die annually out of every 1,000 born, while in rural districts about 100 less children perish within the same period. These instances will suffice to show that in other general communities differences are as well marked as they are in India.

The dark and  
bright sides in  
European  
countries.

Different  
races in  
Calcutta  
compared.

Referring again to India, infant mortality is small among the Europeans of Calcutta, large among the Eurasians, and very large among the natives, being higher among Mahomedans than Hindus.\*

\* Whites ... = 58 per 1,000 born.  
Mixed Races = 306        ,

The significance of all these facts leads to a conclusion of the greatest practical importance, and one which it is most desirable should be thoroughly comprehended by those who have the charge of children in India, for without such knowledge the immense powers we possess in the matter of preserving infant life not only remain obscured, but they can hardly be guessed at,—so great, so enormous, so otherwise incomprehensible are they.

What, then, is the reason that soldiers' children die at a very high rate, while of the European civilians' children an exactly opposite condition holds? that native children die at a most excessive rate? that the Eurasian rate is intermediate between these two latter? that the rate which prevails in certain countries of Europe is double or treble that of other European countries? that the rate for England is higher than that of Scotland, and that it even varies in certain districts of England itself? The reply is summed up in the one word, management. "In respect to the management of infant health, and referring to the The different theories and empiricisms brought to bear upon it," results entirely explained by writes Sir R. Martin, "I have everywhere observed the management to which that even the fatal results of mismanagement but subjected.

Hindus ... = 315 per 1,000 born.

Mahomedans = 363 , , (Payne.)

Dr. McLeod says of 1884 in Calcutta:—"Infant mortality is higher among natives than Christians, and the rate at which the infants of Mahomedans appear to die is remarkably and lamentably in excess;" again, "the proportion per cent. which tetanus constitutes of the total infant mortality among the different races is as follows:—Non-Asiatics, 15; mixed races, 15; Hindus, 44; Mahomedans, 43."

Necessity for  
the foregoing  
knowledge.

rarely cure the mother of her theory or her quackery, —so much stronger are ignorance and prejudice than death." For this very reason I have appealed to the intelligence of the reader, who, if he will but reflect upon the facts here put before him, ignorance, prejudice, theories, and quackeries cannot prevail.

Individual responsibilities.

Investigations as regards Europe.

Know, then, that whether your child is to live or to die in your far-off home is a matter which lies chiefly in your own hands. "The treatment of the child in the first twelve months either destroys his life or leaves indelible traces on his future existence," writes Farr, who procured detailed accounts from several countries in Europe of the treatment of their rabies, and found it to be very different, and in many instances very sad. "Here they are bound up like mummies; there they are not nursed by their own mothers, and as they advance in age are fed on improper food;" and to the difference in management the difference in mortality is shown to be due. The same great authority observes that there is something terribly faulty in the present mode of treating infants in England, "for if the English mortality from convulsions were reduced to the Scottish standard, 17,000 lives would be annually saved to England. These 17,000 lives who annually die in England from convulsions above the Scottish proportion are truly lives wasted, and their deaths are truly preventible deaths. There cannot be the slightest doubt that the cause of the very high mortality among the nursing children of England is that they get spoon-food far too early in life, before the stomach of the tender babe can digest anything but the mother's milk. This is, indeed, the vital difference between the mode of feeding infants in

England and in Scotland." The high tribute which is exacted by death from the parents of infants in the mining districts of England is due to the same causes in an exaggerated form; while the agriculturists, whose pecuniary means are less able to bear the burden of supporting a family, are immensely more fortunate, because custom does not demand that they desert their infants daily, for the mine's mouth or the factory. The squalor, dirt, and confinement of parts of all large towns exert their marked influences in a very perceptible way among the children of the poor, just as they do in the native portions of Calcutta. Of the infant mortality of that city, Dr. K. McLeod tells us that in 1884, "very nearly 75 per cent. was contributed by fevers, convulsive diseases, and bowel complaints in the proportion respectively of 14, 57, and 3 per cent. of the whole. Tetanus accounted for 43 per cent. of the whole mortality among infants." "That a high rate of infant mortality should prevail in native Calcutta will appear natural to those who know the effect of filth and foul air on infant life, but the full measure of this needless destruction of life can only be understood by consideration of its special causes, of the singular exemption of European infants, and of certain saving influences which are in existence here, but are neutralized" (Payne). But though dirt in Calcutta plays its usual part in enhancing the mortality, in the more filthy localities the actual death-rate is but slightly in excess of that of the cleaner places; and the proportion of deaths among the various races is maintained without variation in all localities, proving that to the domestic treatment of the infants the terrible result is really due, and not primarily or principally to dirt.

Investigations  
as regards  
India.

A low mortality to be expected in India.

It has often been remarked that there *ought to be* a low rate of infant mortality in India, seeing that the scrofulous constitution is far less likely to be developed in a tropical than in a temperate climate, and that scarlatina, measles, whooping-cough, and other affections peculiar to childhood, are either unknown, or run such mild courses as virtually not to affect the death-rate. "Calcutta, among its resources for the destruction of infant life, does not include those less avoidable causes of death which work elsewhere, but owes to qualities or habits of its own the pre-eminence which must be assigned to it among deadly places. That European infants die in small numbers means simply that they are not subjected to the same fatal treatment; and that the mixed races hold an intermediate place is due to the admixture of native habits among the poorer classes. Death, where it abounds, does not arise from climate, or any cause that is out of reach, but from that which the people have created and perpetuated for themselves." (Payne).

General conclusion

Happily, the verification of the legitimate anticipation that a low death-rate is normal to India has now been attained; and it is proved beyond all gainsay that the management to which parents subject their children is the great factor which influences the result.

## CHAPTER II.

### GENERAL EFFECT OF THE CLIMATE

#### UPON THE CHILD'S CONSTITUTION.

WE have seen that there is really a very hopeful— CHAP. II.  
indeed, we may say a satisfactory—side to the Notwith-  
standing, the question, in that the climate is deadly only as we climate is  
make it so. But is the climate of the plains of India inimical to European  
in no way inimical to the European child's constitu- child-life.  
tion? No well-informed person will reply to this question in the negative. Unfortunately it cannot be said that no hurt is to be apprehended greater than might occur in its natural climate. On the contrary, it may be laid down as an axiom that an amount of carelessness which in England will give, but an ordinary English death-rate, will in India yield a frightful mortality. Neglect in India will render the chances of survival much less than those of death,— in a word, to preserve our children to us in normal proportion we must adopt precautions more stringent than are called for in England.

There is a pretty general medical opinion that the Indian climate does not in any way injure the health of the European infant during the first year of its life; further than this, the conviction is prevalent that with proper precautions up to the age of 5 or 6 years the child may be reared nearly as satisfactorily in the plains of Medical testi-  
mony on the  
point, and the  
age at which a  
child should  
be sent to  
Europe.

India as in Europe; but beyond these ages all are agreed that physical and moral degeneration occur. The child then "exhibits the necessity for change of climate by emaciating and outgrowing its strength" (Martin). So profoundly does the climate, after the period of immediate childhood, influence the constitution that the effect of a more prolonged residence is rendered permanent throughout life. Such is the teaching of experience; indeed, Sir R. Martin goes so far as to condemn the attempt to rear children up to and past youth, in the plains, as an "altogether cruel and impracticable endeavour." And so it is, unless there be special management. Dr. K. Mackinnon remarks that even where there is no tangible disease nutrition and oxygenation do not appear to go on favourably, the skin becomes pale, the muscles waste in substance and tone, the joyous spirits of children are wanting, the body is inert, and the mind listless. We daily observe evidence that "the European was not made for the climate, nor the climate for him" in the attempts to rear children in the plains past a certain age. "The children of the upper classes of Europeans in India who remain there during the first five or six years of infancy only," says Martin, "exhibit a restlessness and mobility of the nervous system—a busy idleness—beyond their age, as compared with the habits of children of the same ages born and bred in England. There is also a marked disposition to relaxation, and to a loose, relaxed state of the joints in such children, and to consequent lateral curvature of the spine." In 1872, Sir J. Fayrer wrote without being in possession of the

valuable facts which Dr. Payne has since put forward ; yet the case cannot to-day be stated more correctly and more plainly than in the following words, when he says, “ I have no desire to prove too much, as I certainly should appear to attempt to do were I to advocate the theory that Calcutta, or any other part of the plains of India, is a *desirable* locality for the training and nurture of European children ; such, indeed, would be a theory as dangerous as false. For although the exceptionally favourable circumstances of the European Female Orphan Asylum prove that the European child may thrive, yet it is certain that without favouring influences it will not ; and the statistics of infant life in the British army in India prove not only that such is the case, but that the obstacles to success in the rearing of children are very great. It has long been known to the English in India that children may be kept in that country up to five, six, or seven years of age without any deterioration, physical or moral, and in the higher classes of life with probably as little, if not less, danger to life than in England ; for most assuredly in some respects—as, for example, scarlatina, measles, whooping-cough, thoracic complaints, and even dentition—they suffer less in India than in England. But after that age, unless a few hot seasons spent in the hills should enable parents to keep their children in India until a somewhat later age, to do so is always a doubtful proceeding. The child must be sent to England, or it will deteriorate physically and morally, —physically because it will grow up slight, weedy, and delicate, over-precocious it may be, and with a general feebleness not perhaps so easily defined as recognised,

a something expressed not only in appearance, but in the very intonation of the voice ; morally, because he learns from his surroundings much that is undesirable, and has a tendency to become deceitful and vain, indisposed to study, and to a great extent unfitted to do so,—in short, with a general tendency to deterioration which is much to be deprecated, and can only be avoided by removal to the more bracing and healthy (moral and physical) atmosphere of Europe.” The further we investigate the matter it becomes more and more evident, in the words of Quetelet, that “care does everything, and climate nothing or very little ;”—nothing in the native climate of the child, and not much in a foreign climate. Circumstances combine to prevent some persons sending their children to Europe. For such there ought to be immense comfort in the knowledge that with properly directed care the pernicious effects of climate, which carelessness will render disastrous, may be assuredly to a great extent warded off.

Why the infant is peculiarly liable to the influence of climate.

This is the proper place to inquire, what are the peculiarities in the infant constitution which render the climate of India obnoxious to its vitality and maturity? The several parts which compose the body of the infant in any climate are softer, they contain more blood, and are more fluid than those of the adult. The skin is exceedingly delicate, and the microscopical blood-vessels which pervade the whole body are at this early period of life exceptionally active. The same may be said of the glands. The brain is large, and it is less solid than in the adult. The whole nervous system is developed out of all proportion in advance of the muscular system, wherefore

the excitability is greater by far than at any subsequent period of life, and it is to be recollected that all the functions of the body are immediately under nervous control. In short, the vital powers are intensely though delicately active, the nervous susceptibility is extreme,\* and there is a quick and comparatively strong circulation, with a very abundant supply of blood. Now it may be laid down as an axiom that the higher the temperature the more susceptible is the system to nervous influences. A hot climate at first stimulates the nervous system (even in the newly-arrived adult), which being, so to speak, in excess in Morbid constitutional effects of a hot climate. infancy, is out of all proportion thus affected if unduly exposed. Hence we have in hot climates infantile lock-jaw, frequent convulsions, death during teething, and an abundance of nervous affections generally where there is bad management. But a hot climate has a secondary or depressing effect, producing a feeble circulation and lessened muscular power, with consequent congestions of the liver, spleen, and bowels, which are peculiarly soft and vascular in infancy. The minute muscles which ensheathe the innumerable blood-vessels of these softer organs, being relaxed, their veins and arteries expand, the result being that a certain amount of blood, which is thus wrongly stored, is lost temporarily to the general circulation and to the nutriment of the body. The balance between the circulation and nervous influence is, in fact, disturbed.

\* Consequently an infant may succumb to an illness before there has been time for it to affect any organ sufficiently to permit subsequent detection.

## CHAP. II.

This knowledge applied to infant life explains the statistical facts.

This knowledge not only coincides with all the facts stated in the first chapter, but it actually explains them. The infant under ten or twelve months of age, with care, thrives, we have seen, as well if not better in India than in Europe, because the large amount of heat which is natural to it, and which then is one of its greatest requirements, it has in abundance, and at the same time means are taken not to expose it to excessive heat. It possesses freely the blessing of fresh air, more so than in Europe, and its food being everywhere uniformly simple, the vital functions enumerated are not called upon unduly; hence the favourable statistics of the children of the well-to-do Europeans in Calcutta, whose education, and the facilities yielded by social position, enable them to adopt those precautions against the effects of a tropical climate which are so easily put into practice where there is an abundance of house-room and a sufficiency of attendants, but which nevertheless are out of the reach of none; while the indifferently cared for soldiers' children give a high rate of mortality from nervous affections and diarrhoea during the earlier months of life, and the badly-managed infants of the natives of Calcutta yield a terrible mortality from lockjaw and other nervous disorders.

Effects on general health of elder children.

But when the term of infancy has expired, the child participates more and more as its life advances in the disadvantages under which the adult exists in India, till after a few years they are exceeded. The elder children therefore languish, or to some extent degenerate. What are these disadvantages? Categorically they may be enumerated thus:—(a) a diges-

tion slower than in the European's natural climate, (b) consequently a lessened appetite, (c) and therefore slower nutrition; (d) a generally relaxed state of the system, (e) a tendency to poverty of blood, (f) and finally, lessened mental and bodily vigour, because the wear and tear (waste) incidental to climate are more considerable, while the supply (nutrition) does not replace the loss so rapidly as in a colder climate.

These are the more plainly marked deleterious effects; but there are others which it is desirable to mention briefly. Heat of climate very materially affects the quality as well as the quantity of the food appropriated for nutrition, and not infrequently creates a morbid appetite for a class of food which may sooner or later prove injurious. The belief is now largely entertained that the summer infantile diarrhoea of England is chiefly due to an alteration effected in the quality of the food by sudden accessions of heat. With such sudden accessions, the infant bills of mortality rise, in England, as certainly as does the thermometer. Every parent in India is aware of the trouble there is to restrict children to their appropriate food; how the light pudding is carefully eschewed, and highly-flavoured meats clamoured for—a petition too frequently entertained. The effects of the vicissitudes of the Indian climate are deserving of a moment's consideration. The skin is, it is almost needless to state, penetrated with nerves so closely that a needle's point cannot touch it without coming into contact with some of them, and all these nerves have direct telegraphic communication with the inner vital parts of the body. In consequence of the congested state of the surface, and

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Chills.

The liver and spleen.

Respiration.

European children thrive well in the hills.

the exalted nervous impressionability of the child in India, as products of a hot climate, the body is peculiarly liable to chills, which being conveyed by the nerves to the interior, frequently derange the functions of the abdominal glands, obstructing assimilation of nutriment, creating congestions, and

otherwise doing injury. The liver and spleen frequently suffer much in this way. An impaired liver means diminished removal of worn-out tissues, and their consequent retention in the body; while the spleen, having much to do in the way of perfecting the blood and preparing it for nutrition, if impeded in its function, is sure to originate poverty of blood and general loss of bodily vigour. There is yet another important effect of climate, viz., that the force of the respirations is very greatly diminished.

The lungs being one of the great channels for the consumption of worn-out materials by oxygenation (combustion), their diminished action will manifestly throw additional work upon the liver, which also largely disposes of waste. But the liver itself is, so to speak, working under difficulties; hence we see how essential it is to adopt a simplicity of diet, and to attend to the state of the bowels, these being the most potent, though the easiest means of preserving the healthy action of the liver, the derangements of which need not actually amount to disease to work profound harm.

*Effects of Residence in the Hills.*—In 1873 there were 1,082 soldiers' children located in the hills, many of whose constitutions no doubt had previously undergone deterioration in other parts of the country, and there were 5,671 in the plains. The

death-rate among the former was 50 per 1,000, and among the latter 71 per 1,000. In the previous year the proportions were 91 and 117 per 1,000 respectively. The numbers of the previous four years were much the same. These figures represent an additional mortality of 20 per 1,000, or 110 deaths in the plains out of the 5,671 children more than would have occurred had all been in the hills. Sir R. Martin, in 1861, wrote, "The principal of the Lawrence Asylum says that the children of soldiers in the plains die so early that only about one in five is found surviving its fifth year of Indian sojourn, while in the mountains they thrive like children in the healthy country districts of England." In the same asylum from 1847 to 1850 only two deaths occurred, and those were of children who had been but a few weeks in the institution, and who arrived ill. It is true that "the inhabitants of the asylum have nearly all passed the most dangerous period of life, but a small proportion being under five years of age" (Sanitary Commissioner), and that it is therefore hardly fair to institute the comparison: nevertheless the fact stands out prominently that the community is an exceptionally healthy and vigorous one. Beyond all cavil, European children may be born and brought up in the hills in a state of physical health not inferior to that of those who have been wholly reared in Europe. I have known many such, but unless advantage be taken of some of the excellent institutions which are available the moral tone is not likely to be of a high order.

## CHAPTER III.

### THE MOTHER'S HEALTH DURING PREGNANCY, AND ITS EFFECTS UPON THE CHILD'S CONSTITUTION SUBSEQUENTLY.

CHAP. II

Subject not  
generally ap-  
preciated.

THE mother's system yields nourishment to the infant before its birth. By bearing in mind the extreme rapidity of the child's development while still within the womb, and that no other material than the maternal blood is supplied to meet the whole burthen of growth, it becomes easy enough to understand the great influence thus exerted upon the constitution of the child; but the extent to which it may suffer is either unknown, or it is generally but very ill appreciated. Possibly it may be that while the influence of the quality of the blood is admitted, there is a difficulty in believing the readiness with which it becomes changed in response to the surrounding circumstances of the individual, for as no mother would wittingly malnourish her child after its birth, it is hardly to be supposed she would commit a similar erime before it had been ealled into independent existence.

Its import-  
ance.

Under any circumstanees the health of the pregnant European woman is, in India, liable to suffieient

deterioration to cause it to be a matter of great importance that she adopt precautions much more strict than are demanded in Europe; otherwise not only may mischief arise to the child, but even its death be brought about. Nothing is more certain than that impressions, constitutional or mental, are transmitted to the child from the mother while the former is still within the womb. "This consideration is of such importance, and appeals so directly to the most powerful feelings of womanly nature, that it ought to be sufficient to ensure an adequate attention to health on the part of all likely to become mothers. Common sense and a little self-denial will generally secure all that is in her power" (Churchill).

The diet of the pregnant woman should be amply sufficient, but always simple. An unusual use of wine or beer is not only unnecessary but positively injurious. The capricious appetite, which attaches to the condition of pregnancy, must not be yielded to. Moderate exercise, short of fatigue, should be indulged in. Riding, dancing, and all violent exercises, such as lawn tennis and badminton, of a straining nature should be avoided. Walking is beneficial. The legs may be used, but the arms should be spared. By straining at the games named, just as happens in lifting weights, the abdominal muscles are brought into sudden and jerky action, which obviously ought to be avoided. Late hours are to be eschewed. Rest in the horizontal position may be more freely indulged in than formerly. The bowels should be kept regular by means of diet, or, if necessary, by castor-oil or rhubarb. Such

Hygiene of  
the pregnant  
woman.

aperients as aloes and seidlitz-powders, as well as all patent medicines of unknown composition, are to be avoided as dangerous. The dress should be loose, so as to allow space for the growth of the child and to give a freedom to the mother's lungs sufficient to compensate for the increased upward pressure of the womb on her chest. It is not desirable that she should forego any of her usual occupations.

**Importance of control of temper.** Not less important is it that the future mother should control her temper and avoid scenes of excitement.

The brain and nervous system of the child are developing with such rapidity that any diseased action is, as it were, easily sown in such a virgin soil, and once established is not so easily dispelled, but may gain force proportionately with increase of the organ, which then possesses no natural powers of resistance to re-establish healthy action. Instances are not wanting of the immediate death of the infant in the womb of a woman who has been subjected to sudden terror or violent passion ; nor is it difficult to learn of many cases in which severe mental emotion of the mother has been succeeded by an offspring possessing a feeble constitution, and subject to epilepsy, convulsions, or even insanity.

The infant participating thus in the health of the mother, any evil changes induced in its delicate organism may become permanent, terminating in life-long disease. "The children of persons who enfeeble their constitutions by late hours, by being in hot and crowded rooms, and by irregular diet, are far more disposed to convulsive affections than the children of those who are regular in their mode of living, and who enjoy calm tranquillity" (Tanner).

## CHAPTER IV.

### MANAGEMENT OF THE INFANT

AT AND IMMEDIATELY AFTER BIRTH.

#### *Section I.—The first day of life.*

AN infant, let us assume, has been born without CHAP. IV. accident, and separated from its mother. The Points requiring immediate attention are, attention. care of the cord, warmth, and rest.<sup>1</sup>

The cord having been inspected carefully to see Inspection of the cord. that there is no oozing from it, the infant is to be rolled in flannel, which has been well warmed, and allowed to rest in the arms of an ayah or other warm place, while the necessary attention is being bestowed upon its mother. Warmth is at this moment of the Warmth. greatest consequence, for the temperature of the newly-born infant falls many degrees below that which, during the rest of its life, will be natural to it, or which would subsequently be compatible with its vitality.

Rest, for these few minutes after the comparatively Rest. violent exercise of struggling and handling, is a good thing, though hardly essential so far as it concerns delaying the next operation, namely, the bath, should everything be ready for it ; but which, in any case, Temperature after this interval, is (at a temperature of 100°) to be <sup>of</sup> bath. administered with *gentleness and rapidity.*

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If there is not a thermometer at hand, the elbow of the nurse immersed in the water will afford a fair test as to the appropriateness of the temperature. The hand should not be trusted to; it is not so sensitive as the thinner skinned and habitually protected elbow.

Vernix  
caseosa.

Sometimes there is a large quantity of white sticky substance adhering to the child's skin; sometimes there is but a little, almost always some. The complete removal of this substance is usually easily effected by anointing, with a little friction, those portions of the skin upon which it is seen, with oil, lard, or butter. An emulsion is thus formed, which admits of ready removal with the sponge, soap, and water, while the child lies upon the nurse's lap, before immersion in the bath. Should it happen that all the white substance is not thus completely removed, no delay, or picking or rubbing, is justifiable in further attempts. Rapidity and gentleness are the really important points, and it is of no great consequence whether thorough dislodgment be effected; but it is of moment that neither chill nor exhaustion be imposed upon the delicate organism which has been transported from the warm, dark, and still womb, into the midst of cold, noise, and light.

First washing.

Quickness and  
gentleness  
essential.Care of the  
eyes.

A word of caution as regards the eyes, during this first bathing, is necessary. Scrupulous care should be observed that none of the soiled water be permitted to enter them, otherwise the infant may commence its life with an attack of ophthalmia. The process of drying and the application of dusting powder (see "violet powder") are now to be proceeded with.

Navel-string. The arrangement of the navel-string next claims attention. The first thing to be done is to examine

it attentively for a moment, and if there is any appearance of blood oozing from it, to apply a fresh ligature close to that which is already upon it.

Great care must be taken that the cord be not jerked or pulled, through carelessness. From the centre of a piece of soft, clean rag, a portion is cut sufficient to allow the cord to be passed through it, and this having been placed in position, a strip of similar rag is to be gently wound round the cord, which should now be loosely coiled upon the flat piece which lies upon the abdomen. Over all a flannel binder is to be sewn with a wool-needle and cotton (pins should never be employed), and the process of dressing is to be completed. Then the infant should be wrapped in a soft woollen shawl and placed in its mother's arms, in close proximity to her body. Usually the baby will at this time fall asleep, and so remain for some hours. From such a slumber an <sup>Infant's sleep</sup> officious nurse must not be permitted to awake it on <sup>not to be disturbed.</sup> the plea of giving it nourishment, or upon any other pretence. Should, however, there not be an inclination to sleep, the mother may at once apply the child to her breast, an act which will prove beneficial <sup>Infant to be given the breast at once.</sup> to herself and to her infant—to the former, by contributing to the contraction of the womb and stopping any tendency to bleeding; to the latter, by communicating warmth, and inducing the flow of nourishment.

The circumstance of proximity to the mother was found by Dr. Crombie's observations to exert a marked influence on the temperature of the infant. The power of manufacturing its own heat has not yet been acquired. All the heat which can be safely spared has been parted with by the little

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Imparted warmth essential.

body, which cannot create more, to be retained by the shawl and clothing. "The consequence of this is that the powers of the child are insufficient to raise its temperature above 94 or 96 degrees unless assisted by artificial warmth to be derived from the body of its mother. A great practical lesson underlies this subject, namely, the duty of the physician to see that newly-born children, especially such as are weakly or premature, are never left exposed unnecessarily to the air, even in a warm climate like this; that they are warmly clad, even from the very first, and that they receive all the artificial warmth from their mothers, possible. The feeble powers of the young infant may be just insufficient to raise its own temperature to a point compatible with the performance of the functions of life, unless aided by the instinct with which mothers are endowed, to lessen the radiation from the surface of their infants by contact with their own persons."

Imparted warmth to infant enables ventilation of apartment.

Another reason why the infant should be in proximity to its mother at this time is that it enables the ventilation of the room to be thoroughly carried out; a matter of the greatest importance to both mother and child. So long as the infant lies in contact with its mother's warm body, there need be no fear of its catching cold. The windows and doors may be thrown open with impunity, if only draughts be excluded and the cold is not excessive. As a rule the lying-in chamber is kept much too warm, either for comfort or safety.

Dress.

The mode of dress must be left to the previous ideas of the mother, but a protest cannot be out of place against the "fashion" which prescribes innumerable garments, and which, to say the least, entails delay, unnecessary exposure, and fatigue at a moment when each and all of these should be avoided. I will only recommend that flannel be not placed next the skin, the very softest is too rough and irritating; but

flannel should be used, and just as effectually, immediately outside a muslin chemise.

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It is seldom, if ever, necessary to have recourse to any artificial means of nourishing the newly-born infant, though prejudice on the part of nurses usually eventuates in an opposite course. "Seeing is believing," say they, and till the white fluid can be actually squeezed from the breast, it is concluded no nourishment is secreted. Thus has originated the popular belief that till the third day there is no sustenance for the child to be had from the mother. This is altogether an error, and a serious error. Nature has fully supplied all that is necessary for the wants of the child. "Small in quantity and comparatively poor in quality as this provision admittedly is during the first two or three days after delivery, it is nevertheless amply sufficient for the purposes of nutrition" (Ewart). Not only is this so, but the early secreted juice (for milk in appearance it then is not) is almost invariably sufficient to effect the removal of the black contents of the bowels, about which nurses usually express so much anxiety that they are unhappy if not permitted to drench the unfortunate infant, within a few hours of its birth, with purgatives. The secretion which is at first abstracted from the breast by the infant meets all requirements of nourishment and purgation; sleep, warmth, and cleanliness being its only other necessities.

No artificial food to be given.  
Secretion of breasts is sufficient.

Some deprecate the practice of putting the child to the breast immediately after its birth. It is well, therefore, to quote the words of a great authority. "The earlier a child is put to the breast the more fully does the uterus contract, the sooner is the meconium purged off, the less chance will there be of the

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mother suffering from milk fever, sore nipples, distended, painful, and knotty breasts, milk abscesses, &c., and of the child from flatulence, disordered stomach and bowels, aphthæ, &c." (Rigby).

No aperient  
to be given,  
being actually  
injurious.

The castor-oil which it is usual to administer to the newly-born infant is actually injurious, in that it acts as too rapid and too powerful a purge. It at once removes the whole contents of the intestine, part of which, it is intended by nature, should be absorbed into the blood, to contribute nourishment and heat to the body, pending the full secretion of milk, and during that period of rest which is so much needed by mother and child. When castor-oil has been wrongly administered, it is almost a necessity that some artificial food be given, because a premature appetite has been created by the removal of nature's provision. Restlessness follows as a matter of course, instead of that complete tranquillity which should be enjoyed. The infant is subject to the risks and disadvantages of artificial food (*vide* Chaps. vi. and viii.), at the very moment when it is least fitted for an ordeal by which indigestion, flatulency, and perhaps bowel irritation may be induced. In short, the balance between nutrition and digestion is overthrown by interference, while the probability of necessity for the further use of aperients is increased.

Remainder of  
the first day.

Throughout the remainder of the day the infant should be left wholly with its mother, who should offer it the breast whenever it wakes or cries, without reference to periods of time. Thus the attention of the parent will be diverted, and anxiety for herself removed. Of course care must be taken to change all wetted and soiled napkins without delay, and to wash

the soiled parts of the child with warm water. A few hours after birth, perhaps in a much shorter time, the first flow of urine will have taken place, and possibly the usual black evacuation from the bowels will have occurred. In this manner should be conducted the first day of the infant's life. "Masterly inactivity" is a policy which will be found eminently suitable to India, in this matter at least.

### *Section II.—Accidents and Unnatural Conditions.*

But all may not go smoothly with the child. There are some *accidents which may happen at or immediately after birth*, and some unnatural conditions, which, with their remedies, we now proceed to consider briefly.

I. A child may be apparently **STILLBORN**, or it may **Stillborn**. apparently cease to live very soon after its birth. Not a moment should be lost. A human life is in the balance, and let it be remembered that in seemingly the most hopeless cases proper and instant treatment is frequently rewarded with success. Proceed as follows :—

(a) Wipe out the back of the mouth, gently but (a). Clear the effectually, by a deep sweep of the little finger round mouth. which a fold of a moistened soft handkerchief has been passed.

(b) If the child is still attached to its mother, (b) Child ascertain by grasping the cord lightly between the attached, and cord forefinger and thumb whether there is any pulsation pulsating in it. If there is pulsation, do not divide the fairly. cord until the child has cried vigorously; for so long as it beats there is some circulation through the child's body, which may serve to maintain life

till respiration becomes well established. At the same time dash a little cold water upon the face and chest of the infant and administer a few smart slaps. Should there be any delay in the commencing of breathing, while the child still remains attached to the mother, begin artificial respiration as below described.

(c) Barely perceptible pulsations.

(c) If the pulsation in the cord be so feeble as to make it almost doubtful that any exists, and if there are no signs of returning animation; without hesitation, ligature the cord, divide it, and proceed as directed in the following paragraph:—

(d) No pulsation of cord.

(d) If there is no pulsation, quickly ligature and divide the cord. Dash a little cold water on the face and chest of the infant, and smartly slap the chest and the buttocks. Plunge the infant for about half a minute into a warm bath (temperature 102 degrees or so); rapidly remove it from the water, and holding it by a finger hooked into each armpit, expose it to a current of air, by swinging it backwards and forwards two or three times.

(e) If no success, artificial respiration.

(e) If success does not attend these efforts, proceed at once to excite artificial respiration.

(f) Afterbirth expelled with stillborn child.

(f) If the afterbirth has been expelled with the child, or if the separation has already been effected by the attendant, at once adopt the measures described in the foregoing paragraphs (d) and (e).

Mode of artificial respiration.

ARTIFICIAL RESPIRATION is conducted as follows:— Place the infant on its back on the bed. An assistant should draw forward the tongue with his fingers and so retain it between the gums. Standing behind the body, grasp each elbow and extend the arms upwards till they meet directly above the top of

the head, thus causing an indraught of air by increasing the capacity of the chest (inspiration). Then bring the elbows steadily down to the sides again, gently pressing them against the chest, which will be felt to bend in a little, thus expelling the air (expiration). Repeat these motions with about the rapidity of a child's ordinary breathing, until there is a natural attempt at respiration. As far as practicable, regulate the further movements in concert with the natural efforts which are being made, and do not desist till the function is properly established, and the child cries lustily and persistently.

How long should these efforts at resuscitation be persevered in? The reply is,—not only so long as there is a sign of a spark of life, but for at least half an hour, even though there be no sign of success.

When vitality has returned, wrap the infant care- Subsequent fully up and place it upon the *right* side with the <sup>management.</sup> head and shoulders raised, and if it can swallow administer five drops of brandy with water.

II. SWELLINGS OF THE SCALP are not infrequently observed in the newly-born infant, and may occasion alarm. They are soft and puffy, and are caused by the pressure endured at birth. No treatment is required, as a rule. The swellings are unimportant, and will generally subside of their own accord in a few days.

III. BLEEDING FROM THE NAVEL-STRING is to be treated by the application of an additional stout ligature placed nearer to the body than the former one.

IV. Should an infant appear to be unable to suck, Tongue-tied. a medical man should be consulted with as little

delay as possible: he will ascertain whether the infant be TONGUE-TIED. Should there be no immediate possibility of obtaining medical aid, the infant must be fed *by means of a spoon* with its mother's milk, or if this be not obtainable, with fresh eow's milk ( $\frac{1}{3}$ ) and warm water ( $\frac{2}{3}$ ) to which a little sugar has been added.

A rare condition.

Very few children are really tongue-tied. Do not therefore too quickly jump to the conclusion that such is the case, simply because an infant does not *readily* suck.

How recognised.

It may be concluded that the tongue is tied down, when that organ cannot be raised from the floor of the mouth by passing the little finger underneath it; when the string is seen to extend nearly to the tip of the tongue; and when, the infant attempting to suck, the milk flows down the breast without entering the throat.

In absence of surgical aid.

It may so happen that in an out-of-the-way district medical aid cannot be obtained. Only under such circumstances of urgent necessity is it justifiable for unskilled hands to undertake the *surgically* simple operation for its relief.

Operation.

To operate, place the child in a good light in the sitting posture, its head being firmly held; then take a pair of scissors, the points of which have been carefully ground off, and having lifted the tip of the tongue sufficiently to stretch the string, nip the latter slightly, the point of the scissors being held downwards away from the tongue. With the end of the finger, gently tear through the remaining obstruction, and the operation is complete.

Non-action of the bowels.

V. Should the BOWELS NOT BE MOVED within the

first twelve hours of life, examine the fundament and gently introduce a piece of soap about the thickness of a slate pencil and  $1\frac{1}{2}$  inch long. Should it be that the skin extends over the anus, and that no opening can be found, from surgical aid alone is relief to be obtained.

VI. An infant may be born with a CLEFT PALATE ; Cleft palate. that is, the roof of the mouth is split from behind forwards. This condition requires great attention in the matter of feeding ; there is not the slightest use in giving the child the nipple, or in attempting to use the feeding-bottle in the ordinary way. The child *cannot* suck ; if it attempt to do so, the milk will get into the nostrils instead of passing into the stomach. Artificial feeding (Chap. ix.) Mode of feeding. must of necessity be adopted, using an old-fashioned feeding-bottle, a piece being cut out of the top of the nipple sufficient to make a circular opening about so large (O) ; the child should then be placed in the semi-erect posture, the bottle, about half full of the food, being at hand. The nipple should now be placed in the mouth, and the end of the bottle suddenly tilted up. Of course the result will be a gush of milk down the throat. Almost instantly the end of the bottle is to be again lowered, and after a few moments' interval re-elevated, and so on. The feeding is to be conducted by a series of jerks. A spoon may be used, but it is troublesome and not nearly so effectual.

An ingenious contrivance by Mr. Oakley Coles Artificial consists in attaching to the stalk of the ordinary palate. nipple of the feeding-bottle, an elastic flap cut to fit the palate. During suction this is forced back

and forms an artificial palate, which prevents the fluid from entering the nose and enables the infant to suck.

By such means an infant with a cleft palate may be thoroughly nourished and kept in good health Surgical relief till babyhood has passed. Afterwards there will at proper age. be no difficulty, and at two or three years of age the surgeon will be able, in the majority of instances, to remedy the defect.

**VII. PURGING AND VOMITING BLOOD.** These formidable symptoms of the newly-born infant are fortunately rare, and when they do occur their duration is brief (24 or 36 hours). The quantity of blood vomited or purged—one or both—seems amazing. The danger is of course great, but a considerable number of cases (some 40 per cent.) recover, wherefore we may be hopeful. Let the infant be kept very quiet, apply cold to the belly and warmth to the feet, feed with a spoon and don't permit sucking. If there is much exhaustion give a little white wine whey (see "*Receipt*") or a few drops of brandy occasionally. As medicine give 1 grain of gallie acid every hour, and inject a couple of ounées of infusion of catechu into the bowel.

### *Section III.—After the First Day.*

The first day of the child's life having been conducted in the way described, and the mother having assumed her natural function, the subsequent general management of the infant should be as follows:—

Ablution. It has been said that the first washing may be hastily performed, but this is not admissible with

any subsequent ablution, which must be thorough and daily repeated. The word “ablution” is used advisedly in contradistinction to bathing, for the child ought not again to be plunged into the bath till the navel-string has become detached, the object being to preserve the string from any contact with moisture, which in India will cause it to smell abominably; besides which, moisture has the effect of prolonging its retention for some days. If the string be kept perfectly free from water, it will soon become hard, dark-brown coloured, as dry as a chip, without the faintest odour, and it will usually fall off on the third day.

The infant should be nursed frequently, about Nursing. every second hour day and night, and no accessory artificial food should be given to it, for the reasons previously entered into (p. 29). Whether or not the mother’s milk be apparent, there need not be the slightest fear of starvation (the argument with which the nurse is pretty sure to appeal to the mother’s feelings), unless indeed an aperient has been wrongly administered (p. 30).

The bowels will probably be relieved three or four The bowels. times each day. On the second day, the evacuations will become of a yellowish colour, the black matter having been for the most part purged off by the first milk; but whether this be completely so or not is a matter of no importance, though it may be urged by the nurse as a reason why the castor-oil, which previously had been objected to, should be now administered. In very exceptional cases, where the mother’s milk does not possess the requisite aperient properties, it may be advisable on the third

day to allow half a small egg-spoonful of castor-oil mixed with warm water, to which a couple of grains of carbonate of soda have been added. By this time the conditions which before rendered a purgative directly injurious will have passed away.

It may here be remarked that during the whole course of a human life there is no period at which

Importance of thorough ventilation is so much needed, and is of so ventilation.

great importance to vitality (both of mother and child), as it is during these early lying-in days. Dr. Payne, with much labour, has *proved* beyond all gainsaying the frightful effects upon infant life of the conditions in which the lying-in rooms of Native mothers in Calcutta are maintained; crowded, every aperture closed, and stifling to the senses. No wonder, then, that one-half the children born to them die within the first fifteen days of life, by a “process of asphyxiation!”

Cleanliness.

The early removal of all fouled linen and evacuations of both mother and child is a matter of much importance, and one which if neglected is calculated to affect very injuriously the health and life of the child, more especially in small apartments. There are certain diseases to which the infant is liable under insanitary conditions, particularly in a hot climate, during the first ten or twelve days of its existence which are known to be the direct effects of

*Effects of dirt and foul air.* foul air and dirt; for instance, the native infants of Calcutta die largely from lockjaw, an almost hopeless condition, which is all but unknown among the European infants of the city, and which is the direct produce of dirt, foul air, and insufficient ventilation.

Warmth.

Warmth is still very essential to the infant's well-

being; it must not be the warmth of foul air, but the imparted heat of the mother. Foul air will not impart heat, nor will fresh air cause colds or chills. Foul air is at this time a most effectual poison; fresh air conveys life and health, and by increasing the vitality, greatly helps to augment the growth of natural internal heat.

Very frequently an infant's skin becomes of a yellowish colour about the third or fourth day of its life. The colouration may deepen for a day or two, and then it will as gradually subside. This condition is not one of jaundice, but is due to the changes which the blood is undergoing in the over-congested skin (West), and is of trivial importance, requiring no treatment. It is, however, certain that want of warmth and of ventilation contribute to its appearance.\*

Yellow coloration of the skin.

\* Should the whites of the eyes become yellow, then true jaundice is present, and the affection is no longer to be considered trivial, but this is very rare.

## CHAPTER V.

### NURSING, AND TOPICS RELATIVE TO IT.

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As during the next six or seven months of its life, the infant should depend wholly upon its mother's milk for its nutriment, we may briefly at this place say a few words concerning "nursing."

I have never known injury to be inflicted upon a mother's breast by the application of her infant, before the white milk was to be seen; or, as soon after birth as possible (see also p. 29). The mother should not partake of much fluid till the sense of distention of the breasts has passed off, but when the infant has been sufficiently early applied, there is seldom any trouble on this score. The relief of her bowels daily, by the assistance of simple warm water injections, will materially tend to lessen the likelihood of such an occurrence; it may, however, be sometimes necessary to employ fomentations and gentle frictions, aided by oil, to relieve a painful hard breast. The frictions should be very lightly performed, the hand barely touching the skin when passing from the nipple towards the edge of the breast, but being pressed with gentle firmness when travelling in the opposite direction.

General  
management  
of the mother.

Hours of  
nursing.

It is usual to lay great stress upon the observance of regular hours in nursing. No doubt it is desirable

that some effort at regularity should be made, but as a matter of fact it is impracticable to effect much at a very early date. It is impossible to insist that the child have its food only every second hour; still, as age advances, education ought to effect a great deal, till a very near approach to regularity is attained by about the end of the first month, if the child be healthy and the management has been good. If it can be accomplished, every second hour during the day and every third hour at night will then suffice, till about the end of the second month, when about an hour may judiciously be added to the daily periods, while an interval of five or six hours ought to be attained at night, and a gradual increase should be maintained as time passes.

The continual application of the child to the breast Evils of continual sucking. weakens the mother by the abstraction of more than nature intended to yield, and deprives her of rest. It does the child no good; on the contrary, it brings on indigestion, rejection of milk, flatulency and diarrhoea from over-feeding. The mother should try to teach her infant not to feed so frequently at night as during the daytime, wherefore it is well that it sleep in a separate cot, except in very cold weather and while very young—say for the first fortnight.

“An infant should not receive its nourishment Position during nursing. lying down” (Deweese). The semi-erect posture is the proper one to adopt; exactly that position in which a mother naturally places her child, when she sits in a chair, nursing. The muscular power of swallowing is, in the infant, very feeble, but by the semi-erect position we avail ourselves of gravitation; the child, when so placed, actually obtains more

nourishment, and the apparently causeless rejection of milk is then less frequent.

The nursing mother's diet.

As to the food the mother should use during nursing:—she should abstain from very few things, and be careful to use a variety. Of course, during the lying-in period, the usual simple diet should be employed, but of this I say nothing. Subsequently she should eschew hot curries and highly-seasoned dishes of all kinds, salads, radishes, and uncooked vegetables generally, lobsters, tinned provisions generally, and an excess of solid meat.

Rice, tripe, whipped eggs, sago, tapioca, barley, boiled milk, raw eggs, lamb, parsnips, roasted and baked potatoes, and fritasseed chicken are the most easily digested substances in the order here given: the rice disappears from the stomach in 1 hour, and the fritasseed chicken in  $2\frac{1}{2}$  hours. Beef, pork, mutton, oysters, butter, bread, veal, boiled and roasted fowls are less digestible,—roast beef disappearing from the stomach in 3 hours, and roast fowl in 4 hours. Salt beef and pork disappear in  $4\frac{1}{2}$  hours (Parkes).

Vegetables essential.

She should be particular to partake of a sufficiency of vegetables and good fresh meat. There is a prejudice on the part of nurses against vegetables, particularly potatoes. Such folly is based upon ignorance—indeed, we may term it dangerous ignorance. A nursing mother differs not from the rest of humanity as to the laws which govern the physiological process of nourishment, and these declare that if fresh vegetables be excluded, or even very sparingly partaken of, a scorbutic taint of the blood is engendered, which impairs, more or less, the general health, unfitting the mother for suckling, and rendering her milk unwholesome for her infant. Many times have

I succeeded, by this advice, in enabling a mother, who never before had done so, because she had previously held fast to the theory of the necessity for excluding vegetables, to nurse her child, with perfect health to herself and infant. With such an unfortunate conviction is allied another, namely, that it is essential during nursing to consume a considerable proportion of beer or wine. It is alleged that milk is thus created, and the drain of nursing upon the system is urged as a reason for the necessity for "support." Spirituous liquids *do not* lead to the formation of milk in any degree whatever, and their use in no way compensates for the lack of a proper admixture of food in the diet; nor is it true that nursing is a drain upon the health of any moderately healthy woman—on the contrary, it is known to be beneficial, and that women generally improve in health during its progress. A nursing mother requires, it is true, more fluid than others. She is frequently thirsty. To relieve this thirst, she should drink gruel or barley-water, or milk-and-water, which, besides being drinks, are really nutritious, and therefore milk-forming. Thorough nourishment of the system is certainly demanded, but she does not need extra stimulation, which will render her feverish, heat her blood, and deteriorate her milk. The usual glass of wine, ale, or stout need not be denied at dinner-time, and also at tiffin if desired, but such an allowance is ample; more is injurious.

Fresh air and exercise are essential to good nursing, but over-fatigue should be carefully avoided. A point seldom attended to—possibly but little known—is that immediately after exhaustion, violent exertion, *Effects of* fright, or a fit of passion, a woman's milk is unfit for *fright.*

an infant's nourishment. Instances of the breast-milk having proved fatally poisonous immediately after great terror are on authentic record; such, however, are rare; but diarrhoea, nervous irritability, and general indisposition are symptoms which usually show themselves under these circumstances.

Menstruation  
during  
suckling.

Should a mother happen to menstruate during the suckling period, it is an unfortunate occurrence; but it is not one which should prevent her continuing to nurse, unless the ordinary period of weaning be at hand. Usually, the infant, during the days the function continues, will show some signs of indisposition, generally slight, but which, if at all severe and recurring, proclaim the mother unfit to continue her office; otherwise it is unnecessary that she desist.

Duration of  
nursing.

The European mother is usually able to nurse for about eight or nine months, if she takes care of her health; but a robust native nurse may often be permitted to continue her duties for a full year.

When unfit to  
suckle.

Sometimes it happens that a mother is unfit to suckle her infant. (1) Severe constitutional debility, the result of malarial fevers or the influence of the climate, may be a justifiable cause for non-compliance with the dictates of nature, but fortunately it is not a frequent reason, for the general health usually improves during nursing, and the alleged "drain" upon the system is a fallacy in most cases. Sometimes, however, it will prove a reality. Because there have been occasional attacks of ague, or because the system is a little below par, is no sufficient reason that nursing should not be continued; but the debility may be such that the quality of the milk is much

deteriorated and unfit for the child ; or there may not be sufficient glandular activity to supply the fluid ; or, being supplied, there may not be sufficient general inherent vitality in the mother to compensate for the loss. Except where the debility is considerable and of long duration, the effort is not only justifiable, but it is a duty. A trial should at least be made. (2) A mother who is subject to epilepsy or other violent paroxysmal nervous disorders should not nurse, both for her own sake and that of her child. (3) Abscesses of the breast, if severe, compel non-nursing. (4) The continual recurrence of intermittent fever is also a fair cause for desisting. (5) The occurrence of pregnancy is opposed to good nursing. The quality of the milk then greatly deteriorates, the mother's system not being able to nourish both the babe at her breast and that in the womb at the same time. (6) If after a fair trial it be proved that the secretion of milk is too scanty to be practically of any use, there is no object in continuing a fiction, but unless the mother be prepared to obtain the services of a wet nurse, it is her duty to continue to give what nourishment she possesses, provided her own health do not suffer, to her infant. Even such very partial feeding increases the chances of the child's life. (7) The nipples may be so retracted as to present a serious difficulty. This point should have been attended to before confinement, otherwise the obstacle may be great ; but suction, or the use of Maw's "nipple shield with elastic tube," will usually remedy the defect, if properly employed. Very seldom should this cause be permitted to conquer and to drive the child from its mother.

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Wet nurse.

Selection of.

Assuming it to be decided that the mother, from one or other of the foregoing causes, is unable to suckle her infant, there remains but the choice between a wet nurse and artificial feeding. That the advantages of the former are incomparably greater will presently (Chap. viii.) be shown. We are therefore led to consider the question of the selection of a wet nurse. It is a matter for congratulation that in India the much-discussed disadvantages connected with this class of servants are reduced to a minimum, as compared with England. A wet nurse should be (1) young but not youthful,—never under 20, seldom over 30. (2) In good health; well nourished, with a sleek skin, free from all eruptions or appearance of former eruptions; free from enlargement of the spleen; possessing a good set of teeth; a clean tongue; red, not pallid, gums; sweet breath, and freedom from enlarged glands in her neck. (3) The date of her confinement should approximate that of the age of the child she undertakes to nurse.

This is of importance, for the milk varies in nutritive properties in definite proportion to the age of the child. The milk of a woman whose child is 6 months old, even though she have plenty of it, is not fit nourishment for a baby of 3 or 4 weeks of age. It contains too much of some constituents and too little of others.

(4) The breasts of the candidate should be firm and plump, not hanging loosely down, and should contain a good supply of milk of a bluish colour, and which on standing should yield a cream.

“The best test of the goodness of milk,” observes Dr. E. Smith, “is derived from observation of the child. He should

Necessary qualifications.

be watched while at the breast, and if he sucks vigorously, finishes the meal with the milk running down over his lips, and requires suck but five times in the day, we may infer that the milk is sufficiently abundant. If, on the other hand, he constantly requires the breast, sucks laboriously and with effort, occasionally desisting, and crying peevishly, the milk is probably scanty. As an additional test the infant may be weighed immediately before and after taking the breast. The increase in weight should be from 3 to 4 ounces, according to age."

(5) If the woman be menstruating she should be rejected. (6) She should be of a patient and cheerful disposition.

Enquiries should be made (1) into her previous history, concerning any illnesses she may have had, whether she ever suffered from any sickness which involved prolonged sore throat, eruptions of the skin, or ulcers. If such be the case, she should be rejected. (2) Concerning her husband and his health, present and past, the enquiries last-named should be instituted. (3) Inspect the woman's infant, assure yourself that it is hers and not a borrowed one, consider its age with regard to her statement upon the point, observe whether it presents a healthy appearance generally, and be particular to notice whether there are any sores between the buttocks or at the corners of the mouth. The presence of such sores would call for the rejection of the candidate. (4) Let particular enquiry be made as to whether the woman is in the habit of smoking ganjah or opium; should either be the case, she should be rejected. (5) Under inspection, the breasts should be emptied by her own child, or artificially, and the woman directed to present herself again after the lapse of a few hours, in order to ascertain whether she really possesses a sufficient supply

of nourishment, and that she has not attempted fraud by having permitted a large accumulation.

With due attention to all these points, a wet nurse having been selected, her future management becomes of importance. In the first place, she should have a warm bath and wash thoroughly all over, after which, and when clad in clean warm clothing, she may commence her duties. The next thing is to be careful not to overfeed her, or even to place her too quickly on a liberal diet; but to have due regard to her previous diet and mode of life. By sudden overfeeding, the milk may very greatly diminish, or become of such a character as to be injurious. Let her be employed as much as possible in general household duties to ensure a due amount of exercise, and cause her to move about occasionally, with the infant in her arms, to provide for its exercise. A wet nurse is too frequently allowed to moon away her time in idleness. She is then apt to lose her milk, indigestion will set in, she will become feverish, and her milk unwholesome and irritating. To violent exertion she should never be subjected (p. 43). Do not allow the child to sleep with the nurse at night. See that regularity as to its meals is observed, and that it be not continually hanging on to the breast. Hot curries, chutneys, or too much meat must not be allowed to the nurse. Be very particular that vegetables constitute a due proportion of her diet. Allow her plenty of sleep. Be sure that the woman's own child be kept at a distance, lest she devote part of her nourishment to it. For further details the reader is referred to the previous pages of this chapter.

After the first 10 days or so of life have passed, it is

well, in India, to "teach the bottle" to an infant, because of the liability to intermittent fever and other derangements, which may temporarily unfit a mother or nurse for suckling. It is not recommended that the bottle be employed at this period for the administration of nourishment, but merely that *its use* be taught to the infant with a view to enabling it to meet emergencies. A single teaspoonful of milk with 4 or 5 of warm water and a minute portion of sugar, given through the bottle once a day, will effect the needful education, which, if not commenced early, will only be accomplished subsequently with great trouble and delay, if at all. The old-fashioned *feeding bottle* with- Feeding  
bottle. out tubes of any kind is to be preferred, because it can with great facility be thoroughly cleaned, any particle of old food adhering to it being readily seen, except if concealed in the nipple, which should always stand in a glass of cold water when not in use ; and because it ensures due attention to the process of feeding on the part of the nurse, who is compelled to hold the bottle in her hand all the while.

In exceptional cases the mother's or nurse's milk When  
mother's  
milk does not  
agree, does not seem to suit. The infant becomes fretful and griped, and its rest is very disturbed, while at the same time there may be either vomiting, diarrhoea, or constipation. In such a case the milk may be too heavy being too rich, for the child's digestion. It will not be sufficient merely to diminish the quantity by alternating meals of other forms of food, for still the pure milk has to be disposed of. A good plan is to give half a meal of barley-water (*see Receipts*) from the bottle immediately before putting the child to the breast, with the object of diluting the milk when it reaches the stomach. A

CHAP. V. few grains of bicarbonate of soda may be given after each meal. On the other hand, the mother's milk may be too poor and watery, though abundant. Then the child constantly demands the breast, because he is always hungry. It will then be necessary either to change the nurse, or supplement the breast milk by some other form of suitable diet (Chap. ix.). It is said, and apparently with truth, that when an infant who is not thriving, sleeps much with the nipple in his mouth, and only then, it is a sign of watery milk. The reader is referred to Chap. IX. for further information upon the subject of milk disagreeing with the infant.

## CHAPTER VI.

### THE PRINCIPLES OF DIET,

AS APPLICABLE TO CHILDHOOD—MILK—FARINACEOUS FOODS—  
INTERMEDIATE FOODS—WATER.

HENCEFORTH it will be impossible to follow the child's CHAP. VI. life step by step. We must therefore consider each General principles of diet. point involving its existence in detail. To enable the parent to understand the proper mode of feeding her child, it is desirable to state briefly the general principles of diet as applicable to the infant.

Every human being, whether infant or adult, must consume not only nourishing food, but he must have What is an alimentary principle? a proper admixture of the different elements of food, or alimentary principles, as they are termed. Bread, for instance, is a food, but it is not an alimentary principle; on the contrary, it contains some of all these principles. A pudding is a food, but we know that it has been made with so much flour, so much butter, so much fruit, &c. Any one article of food which can be named is just as much a mixture as is a pudding. Milk is as simple a food as can be conceived, yet in reality it is a complex mixture of the different alimentary principles. We know that it contains a quantity of water, which is an alimentary principle; that it contains oil (termed butter), which is another principle; that it contains curd, which is another, and so on. The same holds good of

CHAP. VI. bread, or beef, or vegetables, and all other foods. This is what is meant by alimentary principles.

Classification. Classification:—

1. Albuminous, of which the curd of milk is typical.
2. Fats, represented by butter in milk.
3. Carbo-hydrates ; sugar, starch, gum, &c.
4. Salts, mineral.
5. Water.

All must exist in food. Of each and all of these, humanity must have a

definite proportion in its food. Instinct of the appetite guides the healthy individual, but the infant is provided, in its mother's milk, with the exact alimentary proportions necessary for its perfect nourishment. Human milk, for instance, contains in 100 parts, roughly speaking, 4 parts of the albuminous principle,  $2\frac{3}{4}$  of fat, 4 of sugar,  $\frac{1}{4}$  of a part of salts, and 89 parts of water.

Proportions vary with age. As life proceeds, the proportions requisite alter greatly, so that in ratio to its weight the child of ten needs three times as much fats and carbo-hydrates as the adult, and six times the proportion of albuminous nutriment. Again, the child requires a greater proportion of food relatively to its size than the adult, because of its extremely rapid growth, by which much nutriment is utilised for the building-up process ; because the waste consequent upon the ever-active life is great ; and because respiration, which is one of the chief means of combustion or consumption of material, is especially active in childhood.

Milk unsuitable for all ages. These conditions change further with age ; hence the qualities of the food must also change. An adult, for instance, could not be wholly fed upon milk, because, to enable him to obtain a sufficiency of

albuminous aliment, he should consume not less than eleven pints daily, and then the amount of fat would be greatly in excess.

A human being cannot exist upon any one class of <sup>Effects of im-</sup> proper proportion aliments, nor yet upon any three to the complete exclusion of one. If an animal be fed exclusively upon any one for a length of time, its health will rapidly become impaired to such an extent that even a return to its natural diet may not save its life. Similarly, if inferior milk be given to an infant, or if the artificial milk be improperly prepared by too much or too little dilution or otherwise, it follows that evil results will assuredly ensue, because there will be excess or defect of some one or more of the ingredients.

The expression "salts," it should be noted, is by no means analogous with what is implied when we talk of common salt. They are compounds of lime, soda, and potash, and are of great importance in the vital process, as they are especially concerned in the currents of nourishing fluids which pervade every part of the body, including the glands of the breasts, which, without their aid, would not be able to secrete perfectly; hence, as before stated (p. 42), the mother who excludes vegetables from her dietary runs the risk of losing her milk and impairing her health, while she denies her infant those numerous salts which are essential to its perfect nutriment, and which should be largely supplied to her blood and her milk, through the judicious use of proper vegetable food.

MILK.—In all kinds of milk the five alimentary Milk. principles exist, though in very varying proportions.

CHAP. VI. It is, therefore, evident that the young of animals fed upon each kind, in reality obtain a wholly different sort of food, and it requires no argument to prove that the milk of one is therefore an unsuitable food for the young of another. Comparing the milk of the cow with that of the woman, we find that, while the amount of water is less, that of the solids is much greater, the fatty, saline, and albuminous matters being in excess, while the sugar is diminished. Hence it is usual to reduce the quantity of butter and curd by dilution, and to add sugar in order to imitate the woman's milk ; but no proportion of dilution will effect an exact imitation.

## Ass's milk.

It is usually believed that ass's milk is the nearest in quality to that of the woman, but this is an error. It contains more water but is much poorer in curd and butter, and has an excess of sugar and salts ; but it is sometimes very valuable for children who are too delicate to bear cow's milk, it being very easy of digestion, though sometimes it causes diarrhoea owing to the amount of salts in it. If a healthy infant be fed upon ass's milk, a much larger quantity will be needed to make up the requirement of butter and albuminous substances, but then the salts and sugar will be much in excess. Ass's milk, therefore, is not an appropriate food for a healthy infant. The addition of cream would remedy the chief defects, but cream is not easily obtained in India.

## Cow's milk.

The milk of the cow is the closest approximation, though each kind of the solid ingredient is in excess.

## Goat's milk.

Goat's milk contains a very large proportion of curd, and the salts are much in excess. Still this milk may be used with great advantage for the rearing

The varieties represent different kinds of food.

of children. But the goat is a very promiscuous feeder, and it is well known that the nature of the food greatly affects that of the milk. It is quite familiar to every one that purgatives administered to a nursing mother will readily produce an effect through her milk upon the infant's bowels. Hence it is needful that a goat whose milk is used should be tied up within the range of only wholesome food. Neglect of this precaution has led to a prejudice against goat's milk, which is frequently found to produce irritating effects when the animal is allowed to wander about.

*Examination of Milk.*—The lactometer is usually relied upon by the public as a means of judging the quality of milk, but it is a faulty instrument, because, although it may in the cold weather sink to the letter M, which is supposed to indicate that the milk is pure, the very same quality of milk in hot weather will appear, when tested by it, to contain 15 or even 20 per cent. of water. It is better, therefore, to use the hydrometer (fig. 1), (which is the same instrument, except that in the place of a letter indicating the purity of milk, and figures representing that so much water had been added, there is a scale of figures from above downwards—0, 10, 20, 30, 40, and 50, between which there are graduations indicating units), and to apply a correction for temperature, which Parkes gives as follows:—

Examination  
of milk.

Lactometer,  
faulty means.

Hydrometer.



FIG. 1.

39° F	= 1031	80° F	= 1027 $\frac{1}{2}$
60° F	= 1030	90° F	= 1025 $\frac{1}{2}$
70° F	= 1029	100° F	= 1024

That is, at any of these temperatures the hydrometer will mark the specific gravity as above, if the milk be pure; but if the specific gravity, as read on the hydrometer, be lower, it is an indication that water has been added. If, for example, the temperature of the milk is found to be 65°, and the specific gravity to be 1025, we know that a considerable quantity of water has been added, though had the temperature of the milk happened to have been blood-heat, the above specific gravity would indicate purity. In this example, we see by reference to the table that the specific gravity ought to have been 1029 $\frac{1}{2}$  instead of 1025, which represents a loss of 4 $\frac{1}{2}$ , showing that 15 per cent. of water has been added, as the next paragraph explains.

There is a loss of 3 degrees as marked on the hydrometer for every 10 per cent. of water added when the temperature of the milk is about 60 degrees.

Thus pure milk will mark . . . . .	30*
Milk diluted with about 15 per cent. of water	26
do. 20 do. . 23	
do. 35 do. . 18	
do. 45 do. . 15	

When milk has been skimmed, even though it may be diluted with water, the specific gravity will be higher, and similarly a milk which is particularly rich in cream will show a lower specific gravity. Hence another source of fallacy in this method of estimating the quality of milk. As a matter of fact, chemical analysis is the only reliable means.

Another plan. Another very simple plan is to gum a piece of paper which has been marked into 100 equal parts, to the

\* These numbers are to be read as 1030, 1026, &c., water, which is the standard, being 1000, and marked 0 on the scale.

outside of a long glass tube, the lower numbers being uppermost. Fill it with milk to be examined, and allow it to stand for 12 hours at least, in a place sheltered from all wind. The cream will rise to the surface, and the number of degrees (that is, the percentage) occupied by it may be read off. Usually it ought to occupy 8 to 11 degrees. Macnamara objects to this test for India, because the climate causes such rapid coagulation of milk that it prevents the cream rising rapidly, but in the cold weather the objection does not apply.

Cow's milk ought to be faintly acid, and this is ascertained by dipping into it a scrap of litmus paper (which is of a blue colour, but) which will turn pinkish if it be moderately acid, and red if very acid ; the latter condition indicating commencing fermentation and necessitating the rejection of the milk. Of course if chalk has been added, the litmus paper will not change colour ; a sick cow will also usually yield alkaline milk. Woman's milk, on the contrary, is alkaline ; it will never turn litmus paper red. For this reason, before cow's milk is given to a baby, it is usual, indeed it is necessary, to add a proper proportion of lime water to it. This removes the acidity, a fact which should be verified by the use of litmus paper, some of which should always be kept in the nursery.

When it is desired to ascertain the quality of milk, Combine the all three tests—(1) litmus paper, (2) specific gravity, tests. and (3) the amount of cream—should be combined to to yield a correct result.

It is well known that milk will soon curdle if it be exposed to hot weather, or if it has been kept in the hot weather.

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Milk curdling  
upon being  
boiled.

a vessel which contained any traces of former milk which had turned sour ; but the housekeeper may sometimes be sorely perplexed by the fact that milk, which has been seemingly all right, upon being boiled curdles and becomes unfit for use. Now this is accounted for easily enough—fermentive change has already commenced, and the lactic acid thus generated is insufficient to produce a manifest effect at ordinary temperatures, but it is sufficient to do so at a greater heat. Such an occurrence, therefore, argues that the milk has been in contact with an impure vessel, or that the boiling has been delayed till the weather has had time to commence fermentation. Milk which behaves in this way is unfit for an infant.

Milk for the  
journey.

Milk may be preserved for a short journey by boiling it, adding sugar, and while hot putting it into bottles which should be quite filled. Then and there the bottles should be corked and sealed. Another plan is to add ten grains of bicarbonate of soda to each pint, and bottle it without boiling. By these means milk will keep good for some days in moderate weather.

Boiled milk  
is less  
nutritious.

It should be known that milk which has been boiled does not possess quite the same nutritive value to the young infant as raw milk, for there is a volatile principle driven off by the heating which possesses value in assisting assimilation.

Quantity of  
milk con-  
sumed by an  
infant.

As to the quantity of milk an infant requires ;—a series of experiments conducted in Paris by weighing infants before and after feeding, and other observations, have led to the conclusion that a healthy baby aged 3 months will extract from its mother about half a pint of milk at each meal, and allowing five such

meals daily, the total quantity will be about  $2\frac{1}{2}$  pints. This fact will serve as a guide to the quantity of food an infant, which is being artificially fed, requires. Meigs and Pepper, who have entered very fully into this subject, allow 10 ounces (ten meals of 1 ounce each) for an infant of 2 or 3 days of age; thence to the fifteenth day, 15 ounces; thence to the end of the first month,  $1\frac{1}{2}$  pint or more. In the second month, 32 ounces, divided into eight meals. In the third month (seven meals, one every third hour during the day and two meals at night), 35 to 42 ounces. "As the age increases, 8 ounces may be given at a time, five times between 6 a.m. and 10 p.m. and once in the night, making five or six meals, and therefore 40 to 48 ounces per day. This amount of food is scarcely greater than in the second and third months, but by this time it is much stronger."

The length of time which has elapsed since confinement considerably affects the quality of the milk. The water and sugar diminish during the first month; the solids increase up to the fourth month; the butter increases up to the sixth month; the salts at first slightly increase and then decrease. Hence the necessity for the date of the nurse's confinement approximating that of the birth of her nursling.

The sugar which milk contains is not the substance which we know by that name. "Sugar of milk" closely resembles grape sugar in quality, and it comporta itself similarly in the stomach. Sugar of milk may be procured from the chemist, and should always be preferred to common sugar for addition to infants' food, when it can be obtained.

**FARINACEOUS FOODS.**—All articles of a farinaceous

Alterations in  
breast-milk  
with lapse of  
time.

Farinaceous  
foods are  
foreign to the  
diet of early  
infancy.

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kind, such as bread, arrowroot, corn - flour, sago, rusks, biscuit, &c., are in every way foreign to the diet of the infant before the period of dentition. "Constituted in great part, as these articles are, of a principle (starch) which has no existence in milk, and which requires to undergo a certain kind of digestion to fit it for absorption, it is presumable that the digestive organs are not adapted at this stage properly to meet the demand that is made when these substances are consumed. From the fact that they are light and nourishing for older children there is a popular tendency to regard them as forming suitable food for early infancy, but all authorities concur in condemning them as improper for use at such a period. It is true, later on they represent the most appropriate solid material to begin with, but this is when the digestive organs have reached a more advanced stage of development" (Pavy). Dr. West puts the case even more strongly: "You are aware," he says, "that physiological and chemical research have proved that food has two distinct purposes in the organism, the one to furnish materials for the growth of the body, the other to afford matter for the maintenance of its temperature; and that life cannot be long supported except on a diet in which these elements bear a certain proportion to each other. Now in milk, the proper food of infants, the elements of the former are to those of the latter in the proportion of 1 to 2, while in arrowroot, sago, and tapioca they are only as 1 to 26, and even in wheaten flour only as 1 to 7. If to this we add the absence of oleaginous matter, which the milk contributes to supply the body with fat (and which can be eliminated

Pavy's  
opinion.West's  
protest.

only by a conversion of their elements, to which the feeble powers of digestion in early life are not equal), and the smaller quantity and to a certain extent the different kind of the salts which they contain, it becomes at once apparent that by such a diet the health, if not the life, of the infant must almost inevitably be sacrificed." "A child is not nourished," observes Dr. Eustace Smith, "in proportion to the bulk of the food he receives into his stomach. He is only nourished by the food he can digest. . . . Among the poorer classes children are commonly fed upon farinaceous food as soon as they are born. This, of course, they are totally unable to digest. As a consequence they dwindle and rapidly die, or if of a particularly robust constitution, linger on, weak, ailing, and rickety, until an attack of bowel complaint or other intercurrent disease carries them off."

So immensely important is the appreciation of this matter, that I have preferred this to quote acknowledged living authorities than to give my own words. Farinaceous food is *never* to be substituted for milk, nor should it be presented to the infant in any form or quantity till dentition justifies it. Rest assured that should ignorant anxiety lead to deviation from this simple rule, the mother will, in nine cases out of ten, rue the result. Even after the teeth proclaim the fitness for more than mere milk, too large or too sudden an addition will pretty certainly be attended with illness. Without a sufficiency of milk, and with the addition of an irritating substance, the child can only live through accident, so to speak,—the chances are it will die.

An infant's digestive system, in its anatomical arguments.

Anatomical

details, resembles to some extent that of the flesh-eating animals, especially in the shortness of the length of the intestine, indicating that it is fit to receive only animal food. The saliva is not secreted at all during the first few months, nor has the pancreatic fluid any action upon starch till the end of the third month. A transition is, however, gradually working, and is partially effected when the teeth appear, and these secretions begin to be able to act upon starch, to digest which they are as necessary as is fire to the baking of the loaf. The system becomes each month more and more fitted to utilise farinaceous food, and milk alone becomes less and less adapted for sole and perfect nutriment, though it still must constitute by far the chief proportion.

Farinaceous food, then, before the system is ready for it, is, in the first place, an irritant (and as such indirectly a poison), and, in the second place, it will effectually starve the infant.

Results of such food before the proper time.

But milk is the only kind of animal food wholly suitable.

Nature, in due time, prepares for other kinds.

Intermediate Foods.

Let it not be argued that animal food being anatomically indicated, soups, &c., may with impunity be substituted for milk. Such would be a fallacy, less fatal, perhaps, than unbounded belief in corn-flour and arrowroot, yet beyond doubt a dangerous fallacy. For such forms of animal food, as well as for farinaceous substances, Nature, in her own good time, will effectually prepare the way, but she will not brook being tampered with ; she will resent interference in a manner which usually conveys a warning, but which renders resistance not only futile, but disastrous.

INTERMEDIATE FOODS.—There is a class of malted foods, which the genius of Liebig has given to the

world; but as it will be more convenient to discuss them when investigating the subject of artificial feeding, their consideration will be deferred for a future page (Chap. IX.). It will suffice to mention here that this class consists of farinaceous foods which have been chemically acted upon, whereby many of the objections stated in the last section are completely removed, the work of the salivary and other glands is already accomplished, and the irritating properties are abolished.

Unfortunately, the public usually regard these foods simply as varieties of the "infant foods" which are everywhere puffed and advertised; but they are nothing of the kind. It is hoped that the remarks and explanations subsequently to be made will lead some to appreciate their value and to use them with discrimination.

WATER.—As a very important article of diet, it is Water. essential to understand many things about water.

The child, in proportion to its size, requires more water than the adult. It is a cruel and hurtful thing to deny the free use of water to children, as is sometimes done. The error of taking too much is not likely to be committed; but without a sufficiency, the mobility of the fluids (that is, the process of nutrition) is directly impaired, the incoming nutriment is not thoroughly dissolved, nor is the solution of the worn-out tissues (waste) sufficient to enable their excretion through the kidneys, skin, lungs, and bowels.

It is quite possible that a child may get the habit of drinking water more constantly than is necessary, and it may even be right to check the habit to some

Circum-  
stances  
justifying  
restriction.

extent. But what harm can an abundance do? Very little, if any, while short commons may do much. Fortunately the sensation of thirst is so imperious as to permit but little interference. There are circumstances under which it may be right to withhold water for a short time, but they are very rare. I do not think a child should be allowed to acquire the habit of drinking largely at the commencement of a meal, because the heat which is in the stomach, and which is necessary to digestion, is abstracted. A little later on in the meal, when the stomach has "warmed" to its work, the objection vanishes. In many cases of prolonged and debilitating illness, the drink as well as the food should, for this reason, be given only after having been slightly warmed, although cold food and drink may be more agreeable.

Physiological  
reasons for  
free supply.

The plentiful supply of cold drinking water is one of the most powerful means of reducing the heat of the body, and it is also essential to supply the great loss by perspiration. "After compensating for the loss by the skin and with the breath, the surplus passes off through the urinary channel, and it is desirable that this surplus should amply suffice to carry off the effete products forming the solid matter of the urine in a thoroughly dissolved state. The notion has been started that it is advisable to restrict the amount of fluid taken with the meals with the view of avoiding the dilution of the gastric juice. Whether as the result of the influence of this notion upon the public mind or not, mischief, I believe, is frequently occasioned, especially amongst the higher ranks of society, by a too limited consumption of fluid. . . .

"Dilution of  
the gastric  
juice"—a  
fallacy.

It is a mistake to suppose that when we drink with a meal we are diluting the gastric juice. The act of secretion is excited by the arrival of the meal in the stomach, and the gastric juice is not there at the time of ingestion. It happens, indeed, that the absorption of fluid takes place with great activity, and the liquid which is drunk during a meal becoming absorbed may be looked upon as proving advantageous by afterwards contributing to yield the gastric juice which is required" (Pavy).

But water is liable to many impurities, and it is very essential that the importance of a really pure supply be understood. A very hard water is apt to cause dyspepsia and perhaps stone in the bladder.

"There is conclusive evidence to show that the most serious consequences have arisen from water polluted with organic matter. This, in fact, is the impurity that is most to be dreaded. Outbreaks of diarrhoea have been very distinctly traced to the use of contaminated water of this kind. It is acknowledged to be one of the most common causes of dysentery, and has been alleged, when derived from a marshy district, to be capable of inducing malarious fever and its concomitant enlargement of the spleen. From the facts that have been recently made known, there can be no doubt that typhoid fever has been frequently communicated through the medium of water. Some well-established instances have lately been brought to light where milk adulterated with polluted water has been the cause of serious outbreaks of fever. . . . Cholera is another disease which may be considered as having been traced to contaminated water, and probably this forms the chief mode of its

On the contrary,  
water increases its production.

Evils and dangers of drinking impure water.

Ordinary  
modes of  
contamina-  
tion.

spread through a community" (Pavy). Several forms of intestinal worms may also be propagated through the medium of water.

The ways in which water is liable to contamination in India are numerous. The bheestie's rope and leatheren bucket are often kept in a dirty hovel, and when polluted, it may be with distinct disease-germs, lowered into the well; the sides of tanks are used as convenient places for the offices of nature; drainage from foul surfaces is permitted to trickle or percolate into wells; washing and bathing take place near wells, &c. Then, the bheestie is not too particular whence he obtains his supply, provided it saves him a journey; the interior of his mussuck is frequently contaminated by drawing foul water for horses, &c., and subsequently filling the same mussuck with the domestic supply. Nor is the milkman over-careful whence comes the diluent which he deems essential to his profits. Again, in a warm climate, where fermentive changes are so rapid, contaminated water is doubly dangerous, particularly when added to an animal fluid like milk, which fosters germination and the growth of disease-germs.

Waters to be  
avoided.

Tank water, being liable to so many sources of contamination, should, as a rule, be avoided. Water taken from a large and quickly-running river is usually purer in spite of the impurities it receives, because its motion acts as a purifier. Water obtained from a source closely surrounded by the dwellings of men should be avoided; surface and marsh water should be rejected as unfit for use.

The drinking water should always be filtered; but the old gurrah sand and charcoal filter, with its open

surface, should not be used. Some years ago Dr. Macnamara showed the fallacy and even danger of those filters.

Since then, the late Dr. Lewis, who added so much to our knowledge in many matters, connected the mosquito, which deposits its larvæ on the edge of standing water, with certain kinds of microscopical entozoa which he discoveredd in the blood of man, and which are disseminated in swarms, causing to its victims bloody urine and elephantiasis, and producing nervous and febrile states.

The ordinary compressed charcoal filter is that Best kind of which is commonly used, and it is a fairly efficient filters. purifying medium. Dr. De Chaumont does not, however, hold block filters in high esteem, but of the spongy iron filter\* he speaks very highly—indeed, he considers it “the best.” The “Colonial Filter, No. 3,” is one which he also commends greatly.

In the absence of a filter other means for the Other means of purifying water may be adopted, or (as is well in times of danger) they may be employed as auxiliary to the filter. They are :—

- (1) Boiling, which, especially if repeated at intervals, De Chaumont considers to be very efficacious.
- (2) Alum added in the proportion of about six grains to one gallon will clear a muddy water and throw down suspended matter. After the addition, the water should stand for twelve hours before use.
- (3) Lime water added also throws down suspended matter.
- (4) Condy's fluid and alum are very efficient.

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Filtration.  
The “gurrah  
and sand”  
filter to be  
discarded.

\* Spongy Iron Domestic Filter Company, 22, New Oxford Street, London, W.C.

"Add teaspoonful by teaspoonful to 3 or 4 gallons, constantly stirring. When the slightest pink tint is perceptible stop for five minutes; if the tint is gone, add 36 drops, and then, if necessary, 30 more, and then allow to stand for 6 hours; then add for each gallon a solution of 6 grains of alum, and if the water is very soft, a little carbonate of soda, and allow to stand for 12 or 18 hours. If not clear, or if discoloured, filter through charcoal."—[Parkes.]

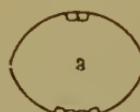
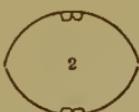
How to  
cleanse a  
block filter.

The block filter, which is the kind in most general use, should be cleansed occasionally in the following way:—Every two or three months air should be blown through, and the charcoal brushed. Then four to six ounces of Condy's fluid in a quart of distilled water and 10 drops of strong sulphuric acid should be poured through, and, subsequently, a quarter to half an ounce of strong hydrochloric acid in 2 to 4 gallons of pure water. Three gallons of distilled or good rain water should then be poured through, and the filter is again fit for use. If sponges are used they should be removed from time to time and thoroughly washed in hot water.

## CHAPTER VII.

### DENTITION AND ITS MANAGEMENT.

THERE are two periods of teething, the first in infancy, CHAP. VII. the second in childhood. The germs of the first (milk Two periods of teething. or temporary) set have existed within the jaw for several months before birth, but they are at no time covered with true bone. As ossification advances, the tooth rises, and pressing upwards, causes absorption of its capsule and the gum, till by their removal the tooth makes its appearance. This upward progress, in its later stages, is what we mean when we talk of "teething." The temporary teeth usually appear Origin of the first set. in the following order:— Order of appearance.



1. The two middle cutting teeth of the lower jaw, at about the seventh or eighth month.
2. The corresponding teeth of the upper jaw, at about seven and a half or eight months.
3. The two lower lateral cutting teeth, at about the ninth month.



4. The corresponding teeth of the upper jaw, at the tenth month.
5. The two front grinders of the lower jaw, from twelve to thirteen months.
6. The corresponding teeth of the upper jaw, at about fourteen months.



7. The four eye teeth in the vacant spaces, between the sixteenth and twentieth months.

8. The second grinders, between the twentieth and thirtieth months.

Origin of the second set.

Order of appearance of the second, and shedding of the first set.

With the appearance of these twenty teeth the first dentition is completed. Strange as it may appear, the germs of the second set also existed in the jaw before birth, more deeply seated than those of the milk teeth. At about the 6th or 7th year a grinder appears behind each of those already existing, making a total of 24 teeth, and soon after their appearance the central front teeth fall out, their roots having been absorbed by the advance of the young permanent set. About a year is occupied in shedding the four central cutting teeth (fig. 2), and another year by the four outer cutting teeth (fig. 4). During a third year the front grinders (fig. 6) are similarly replaced. Next, the second temporary grinders, and lastly, the eye-teeth are shed at any time from  $9\frac{1}{2}$  to  $12\frac{1}{2}$  years, while a little later, four new grinders show themselves, making 28 teeth. Between 17 and 21 years, the last four grinders, or the "wisdom teeth," complete the full set of 32.

The order above related is not invariably followed. On the contrary, deviations are numerous. Children have, rarely it is true, been born with teeth, and children have reached the age of  $1\frac{1}{2}$  year without a tooth showing, but the above description is the general rule. Very frequently the side cutters of the upper appear before those of the lower jaw, and very often the temporary eye teeth fall out before any of the grinders. As a rule, a healthy child teeths with a close approach to regularity. Delay in the appearance of the teeth usually argues want of development, consequent upon some constitutional fault; but strumous children frequently teeth very early.

In England it is an observed fact that the first dentition is passed through with less trouble during the summer than the winter, in the country than in large towns, and, as might be anticipated, by healthy than by delicate children.

Most of those who are best entitled to give an opinion as regards India, hold that teething is a process which, *per se*, proceeds with moderation, and such I am persuaded is the case. Sir R. Martin observes, "It may be said that under ordinary care in diet and clothing the operation of teething proceeds kindly in the climate of India; and speaking from my personal experience I should say that severe teething irritation is seldom a primary affection, but that, on the contrary, it generally follows upon previously existing gastric, intestinal, or febrile disorder; and it is not too much to say that in 18 cases out of 20 these last are but the result of mismanagement and weakness, more common to the most civilised than to the most barbarous communities ;" and he adds, with

Teething is frequently irregular.

Indication of delay.

Circumstances influencing ease of dentition.

Proceeds mildly in India.

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Popular  
tendency to  
attribute all  
coincident  
ills to  
teething.

as much force as truth, "to read some books and to hear some people talk, one might be led to suppose that the teething process of infancy is a *morbid* one from beginning to end." Every affection, whether it be a trivial skin eruption, or a fatal diarrhoea, is usually attributed to teething, should such complications happen to occur during its progress. An unfortunate infant who is poisoned with corn-flour, dies of diarrhoea; or, during the course of this affection, a convulsion ends the brief life, whereupon, death is without hesitation attributed to teething. Another, carelessly exposed to malarial influences, is attacked with fever, and similarly perishes in a convulsive fit,—again, teething is blamed; while down the throat of a third are thrust lumps of meat and highly-seasoned curries, and the usual bloody bowel evacuations which of course succeed, are, the parent thinks, due to teething.

The real  
extent of the  
effect of  
teething.

It is not for a moment intended to be affirmed that teething has no influence on the constitution. It has this influence, that the nervous system, already possessing high susceptibility, is then still further exalted in its sensibility, but it is not true that nature has subverted one of the natural processes of growth into a mode for slaying an indefinite number of infants. No doubt through carelessness and bad management, the mortality is higher during teething than if there were no such process in nature; possibly, even with all due care, a few of the more delicate might be cut off in consequence of the additional state of nervous tension, but teething never did kill anything like the number of infants whose deaths are attributed to it.

Here I would enter an earnest protest against the popular idea that diarrhoea during dentition is a natural and a good thing. So far as India is concerned it cannot be too clearly understood that diarrhoea is never a good thing, that under any circumstances there is always a very considerable element of danger in it, and that the convulsions which it is supposed to ward off during teething are a common mode of death from purging, without any dentition at all. Many an infant has been sacrificed to this prejudice by anxious mothers, who would willingly lay down their lives for their children's sake. The purging, it is argued, is not to be checked because the child is teething. The infant becomes weaker and weaker, more flabby and more pallid. At last a doctor is consulted, who sees through the case at a glance; he endeavours to check the progress of the drain (an effort in which he may be thwarted, if an ignorant nurse or parent has any voice in the matter), but possibly too late,—a convulsion may end life, and according to the popular theory, the purging having been checked or attempted to be checked, "it went to the head." What "it" represents is as difficult to conceive as to explain.

The dribbling and crossness of the child, the swollen state of its gums, and its desire to bite at things—when these signs exist, which is by no means always the case—show that the coming of the teeth is felt by it. When such is the case, we should naturally be particularly careful as to simplicity of food, avoidance of exposure to chills or sun, and of over-heated verandahs. We should keep the bowels regular, seek the open air, not permit diarrhoea or constipation, be careful to have the clothing adapted to the season, be

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Diarrhoea  
during  
dentition.

The  
serious-  
ness of per-  
mitting it.

General  
management  
during  
teething.

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very particular that sleep, which the warm bath will facilitate, be obtained in abundance ; and, if necessary, have the gums lanced.

Propriety of  
lancing the  
gums.

As to lancing the gums, there is a singular prejudice against it on the part of some. I am convinced it is essential and very useful when there is feverishness and a swollen state of the gum, but that otherwise it is unnecessary. It is, however, as nearly painless as can be, and no harm can result from it, unless there be ignorant and cruel hacking, which will increase the irritation fourfold. It is a mistake to imagine that a gum which has been once lanced, and which has closed over a tooth, is more resisting than formerly. On the contrary, although the gum may appear to have healed, the probabilities are it never has actually united, but only approximately closed ; at all events, it is less capable of causing obstruction.

*Diet after the appearance of the first teeth :—* Although a definite period is mentioned as that at which the first change of diet may with advantage be made, or rather when another form of alimentation may be cautiously given in addition to the mother's milk, it must be laid down as a law, that this alteration is to depend not upon the age, but upon the readiness of the system as indicated by the teeth. Till the first pair of teeth have come fairly through, the mother's (or nurse's) milk alone is to constitute the sole food, when there is a sufficiency of it. Even then

Addition to  
diet to be  
guided by the  
teeth.

First addition to the natural food. an alteration is to be very gradually and watchfully made ; and it is to consist simply of two meals a day, of cow's milk (if warm from the animal, so much the better), to which has been added about a quarter of its bulk of lime water, and a teaspoonful of sugar of milk ;

or one quarter of its bulk of pure water, with twenty drops of the saccharated solution of lime (see *Receipt No. 2*), may be substituted for the lime water.

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The objects of the addition of the lime water are (a) to correct Objects of the natural acidity of cow's milk and to make it resemble that of addition of the woman in this respect, and (b) to prevent it curdling into a single solid mass in the stomach. All milk which enters the stomach is converted into curd, but when lime water is added, instead of forming one large lump, it will curdle into a number of minute flocculent particles which, it is obvious, will be more perfectly brought into contact with the digestive fluids whereby digestion is facilitated and heaviness of the stomach avoided. When infants are overfed or when they drink too quickly, they often reject a portion of milk, which being curdled, one might imagine was not agreeing, but the curdled condition is a natural one.

If necessary, a third similar meal may be given in the 24 hours. Even at this period the power of utilising any other substance than milk, as has been shown in a previous section (p. 62), has been but partially acquired; therefore it is well to wait till another month has elapsed before any farinaceous articles are added to the diet. Then the addition ought invariably to consist of an article selected from the intermediate class of foods (p. 62), for the reasons stated. Either Liebig's or Mellins' preparation will answer equally well.

Let it be a standing rule that the first addition to the simple milk diet of infancy be one of this most valuable class, which should always be adopted as the introductory medium to the true farinaceous foods. Of course, a mother may be compelled, long before this period, to supplement the ordinary food of nature, and for such a case instructions will be found under the heading "Artificial Feeding;" but just now we are con-

The second addition.  
The "Intermediate" class to be used as introductory.  
The mother may be compelled to supplement the diet much earlier.

sidering the case of a healthy child with a healthy mother or nurse, who is fully capable of performing her part.

Pure  
farinaceous  
foods.

After a short time, say a fortnight or so, there is no objection to employing ordinary farinaceous articles of food, such as Robb's biscuits, Hards' food, or baked flour. But whatever selection be made, the milk should be but *slightly* thickened with it.

Too great  
"thickening"  
of the food  
injurious.

Nurses are always desirous of making the food as thick as possible, with the object of rendering it more "satisfying." True, a thick food may apparently have such an effect, but it is really torpor and not satisfaction which is induced, while the practice jeopardises the healthy working of the bowels. It is difficult to persuade a nurse that because good hearty feeding of the kind will fatten an elder child, it will not have the same effect upon the tender infant, but that it will be actually bad for it. Here most assuredly it may be said that "what is one man's meat is another man's poison."

Food at  
eighth  
month.

At the eighth month or so, after the second pair of cutting teeth have appeared, pure milk may be given, and the quantity of thickening material, another fortnight later, may be slightly increased; and thus till the ninth or tenth month, when weaning is to be commenced.

At weaning  
time.

About the time of weaning, a little *weak* broth may be given once a day, but at an earlier period it would be very apt to cause acidity and flatulency. The broth may, with great propriety, be added to the milk. On no account should meat pass a child's lips before it has reached  $1\frac{1}{2}$  year of age, and it is very seldom desirable before the age of 2. Certainly two years of age is sufficiently early to commence meat in ordinary circumstances. The Indian dish, "pish-pash," is in every way suitable.

When meat  
may be  
given.

Should there be much annoyance from the teeth CHAP. VII.  
at any time, such periods should be avoided for Avoid periods  
of distress  
for changes.  
changing or adding to the diet.

It is a common practice to give children at about Practices  
which  
pervert the  
taste.  
this age a bone to suck, and other similar dainties. The practice is a bad one; firstly, because the limit is not likely to be made at the mere bone—a little flesh with it is sure to be allowed—and this leads to other dangerous departures from good management; and secondly, because the taste is perverted, the simple milk is rejected, and stronger meat petulantly demanded. The practice of giving a young child a Promiscuous  
feeding  
highly  
objectionable taste of everything it may fancy is, says Churchill, “a monstrous invasion of nature, which will inevitably entail its own punishment in delicacy, ill-health, and suffering.”

For further information on these topics the reader is referred to Chapter IX.

## CHAPTER VIII.

### WEANING, LACTATION, SUCKLING.

SECTION I.—WEANING. SECTION II.—TOO PROLONGED LACTATION. SECTION III.—THE RESULTS OF SUCKLING COMPARED WITH OTHER METHODS OF REARING.

CHAP. VIII.

Points to be considered.

Teeth still a guide.

Weaning to be delayed if child sickly.

Time of weaning.

SECTION I.—WEANING.—The elements determining the period when a child should be weaned, namely, the fitness of the nurse to continue her office, the general health of the child, and the development of its teeth, should be carefully weighed before a decision is arrived at. Obviously we should incline to delay the cessation of the natural food of the infant if its dentition be backward, for the teeth still continue to indicate faithfully the forwardness of development. Similarly, if a nurse be fairly good, we should not counsel a discontinuance of nature's food in the case of a sick child, although it may be deemed judicious to supplement it with some other kind of nutriment.

Broadly speaking, we may fix from the ninth to the twelfth month as the period for weaning with safety; never before the one, if it can be avoided, nor after the other. The milk of the strongest woman becomes poor after 12 months' nursing; and her health, if the attempt be further prolonged, is pretty sure to be injured. Many native women make excellent nurses for a full year, but it is seldom so with the European mother in India.

We should, as before said, avoid weaning at a time when there is much teething irritation, selecting rather a period of quiescence of the nervous and digestive systems. Menstruation would be a justifiable reason for hastening weaning; but not for abandoning nursing too hastily, before the age and development of the child justify such a course (p. 44). The process of weaning should be a gradual one. The mother should at first abstain from nursing at night, and after a time she need only suckle her infant twice a day, morning and evening. The demand for the milk being thus lessened, the supply will decrease steadily in proportion. Should the child, with persistent perversity, decline to accept other food than that of the breast, it must be permitted to suffer hunger, a weapon which, if judiciously employed, will eventually conquer. As to feeding after weaning, the subject will be treated under "Artificial Feeding."

SECTION II.—Too PROLONGED LACTATION.—Too prolonged lactation. Although nursing is a natural function under which the health usually improves, if continued too long, the constitution will suffer. Nervous symptoms will Effects of. supervene, the appetite become impaired, and the digestive organs fail. Mental depression, headache, and loss of flesh are the more marked signs, while ringing in the ears, faintings or faintness, palpitation and pains in the breasts, are each of them warnings which should not be neglected. Warning symptoms.

There are also effects upon the child with which it is important to be acquainted. Children subjected to this mismanagement for any length of time become pale, flabby beings, whose stamina cannot be easily

re-established by subsequent good management ; their stomachs enlarge ; their appearance is pinched, they continually whine, and occasionally scream shrilly. It is asserted by high authority that such children are unusually liable to rickets and consumption.

Comparative results of natural and artificial rearing.

Frequent result of deprivation of mother's milk.

Ignorant advice based upon isolated instances.

Effects of different methods of rearing upon development.

SECTION III.—THE RESULTS OF SUCKLING COMPARED WITH THOSE OF OTHER METHODS OF REARING.—“The infant,” says Dr. West, “whose mother refuses to perform towards it a mother's part, or who, by accident, disease, or death, is deprived of the food that nature designed for it, too often languishes and dies. Such children you may see with no fat to give plumpness to their limbs—no red particles in their blood to impart a healthy hue to their skin—their face wearing in infancy the lineaments of age—their voice a constant wail—their whole aspect an embodiment of woe. But give to such children the food nature destined for them, and if the remedy do not come too late to save them, the mournful cry will cease, the face will assume a look of content, by degrees the features of infancy will disclose themselves, the limbs will grow round, the skin pure red and white ; and when at length we hear the merry laugh of babyhood, it seems almost as if the little sufferer of some weeks before must have been a changeling, and this the real child brought back from fairyland.” But there are not wanting many who, because they have known a single or a few instances where children have been successfully reared by hand, will not hesitate to urge a similar course upon their acquaintances. Let us, therefore, turn from a general statement to hard facts. Dr. Routh has compiled the following table, which speaks for itself more loudly than words can do :—

Method of feeding.	Result in each 100 cases.
1. Breast milk alone till ninth month or longer ... ... ...	63 well developed 23 medium " 14 badly "
2. Breast milk somewhat scanty, necessitating other food during later months to supplement breast milk ... ... ...	57½ well developed 25½ medium " 16 badly "
3. Small supply of breast milk only, necessitating additional food from birth ... ... ...	27 well developed 26 medium " 46 badly "
4. Fed entirely by hand from birth—no breast milk at all ... ...	10 well developed 26 medium " 64 badly "

Compare the fourth with the first series, and it will be seen that the numbers have become pretty nearly inverted ; that is, out of each 100 hand-fed children, 10 only have shown good development (and how many never live to undergo the test ?), against 63 naturally nursed children !

Dr. Russell has shown that in Glasgow 69 per cent. of the unsuckled infants die, and of the suckled 45 per cent. In other words, natural nursing saves twenty-four out of every hundred lives.

The process by which children brought up by hand, and who are improperly fed, decline into the grave, is usually gradual. If so fed from birth, the child "seldom lives longer than two or three months. If he has been suckled for some months before the commencement of the improper food, he has greater power of resistance ; and although under the new diet he will soon become dull, and pale, and flabby, yet the effect upon his flesh and strength are less noticeable,

Gradual  
constitutional  
decline of the  
artificially  
fed.

CHAP. VIII.

and he usually drifts into rickets before any appearances have been thought sufficiently serious to require medical interference." (Eustace Smith).

Mortality in London of the artificially fed.

It is needless to trouble the reader further with figures, but it may be stated that the mortality of hand-fed children is vastly in excess of that of those who are nursed at the breast. Dr. Merriman, after much careful investigation, goes so far as to state that the attempt at hand-feeding in London "proves fatal to seven out of eight of these miserable sufferers." The records of Foundling Hospitals bear similar testimony.

Only urgent necessity justifies artificial feeding.

Nothing, therefore, but the most urgent necessity justifies a mother in bringing up her child by hand. Even partial hand-feeding should not be lightly undertaken, though it is admitted that this course is quite justifiable if the mother is unable to supply all the nourishment needed. Being partially able to nurse without detriment to her own health, it is her manifest duty to do so, and to supplement her own nourishment thoughtfully and carefully. Statistics show that such partial nursing very considerably decreases the risk to the child.

Statistics, however, only show the results of all kinds of artificial feeding, both good and bad.

It is but right to mention here that the figures in the foregoing table and the other statistics regarding artificial feeding are open to the very just objection that they include those who have been fed artificially upon bad as well as upon sound principles, or upon no principle at all; and that any argument deduced from them cannot apply to cases where proper food is given, combined with good general management; still the numbers show what the public actually do accomplish in attempts which are doubtless mainly actuated by the best motives.

## CHAPTER IX.

### ARTIFICIAL FEEDING.

THE METHOD OF ARTIFICIAL FEEDING, AND SOME HINTS  
REGARDING THE DIET OF CHILDHOOD.

WHEN a mother is unable to suckle her child, and it is not the intention to employ a wet-nurse, the child must be brought up by hand. The deficiency of the mother, however, seldom amounts to absolute inability, and it is her duty to nurse her infant to the full extent of her capacity, however partially she may be able to fulfil the task. In almost the worst cases she will be able to suckle twice a day, for a few weeks at all events, and for the rest, artificial feeding must be relied upon.

CHAP. IX.

Mother's duty  
to nurse to  
extent  
of her ability.

But hand-feeding is a process which demands so much attention on the part of the nurse, and so much judgment in adapting the nature of the food to the powers and requirements of the infant, that the general result is eminently unsatisfactory, and it is therefore a course which should be entered upon with reluctance. On the other hand, it is quite certain that infants may be satisfactorily reared artificially, provided all the teachings of experience and science be adhered to.

Difficulties of  
hand-feeding.

Satisfactory  
artificial  
feeding quite  
possible.

An infant, then, is to be brought up by hand :—Let

CHAP. IX.  
Milk the only  
true food at  
first.

Dilution  
alone not  
sufficient.

To prepare  
cow's milk to  
prevent  
curdling.  
(1) By lime  
water.

(2) By barley  
water or  
gelatine.

it be again and again impressed upon the parents that milk, and nothing but milk, under these or any other circumstances, is the only article in the world which is a true food from the moment of birth till the first teeth have appeared. On a previous page (54) it has been shown that by proper dilution and the addition of sugar, cow's milk may be made to resemble pretty closely that of the woman. But mere dilution will not suffice to effect the necessary similarity, because cow's milk curdles into a firm, heavy clot when it enters the stomach, while woman's milk behaves quite differently, falling down in separate loose particles. There are two simple means by which this objection to cow's milk may be obviated. The first is by the addition of lime water (p. 75), which, however, is so weak (containing only  $\frac{1}{2}$  grain of lime to each ounce) that one-third of the total quantity of fluid must consist of this solution to suffice for the accomplishment of the necessary change, unless the saccharated solution of lime (see receipt No. 2) be employed. The second means is by the addition of a small quantity of barley water (see receipt No. 3) or gelatine—not, be it remembered, with the object of increasing the nutritive properties of the food, but of preventing the disposition to clot by simple mechanical means, the thickening substance so separating the particles of curd that they cannot come together into a solid lump, but fall separately as innumerable minute particles. It is as well to know that no other farinaceous article than barley will fully meet the requirement, because it alone contains very little starch, and that little is in a state of extremely fine division. Gelatine (see receipt No. 4) may be used for the same

purpose with equal advantage. A teaspoonful of the solution is then to be added to half a bottleful of the milk and water.

Of these plans, dilution with barley water is to be preferred. The addition of a little well-diluted Mellins' food will effect the same object.

For the newly-born infant two tablespoonfuls of milk may be diluted with an equal quantity of filtered water, and to this should be added two tablespoonfuls of lime water, or it may be treated with barley water in equal quantity with that of the milk used, or with gelatine as above described; a sufficiency of sugar of milk (a small teaspoonful to each bottle) or white sugar to slightly sweeten the food completes the preparation. Brown sugar should not be used, because it is apt to set up fermentation and cause acidity.

Should the parent be on board ship, or otherwise so situated that ordinary milk cannot be obtained, condensed milk may be used at this period with great safety.\* "Infants immediately after birth almost invariably do well upon it."

Condensed milk "is usually well digested, but the nourishment it supplies is very insufficient for a growing baby. The child may get fat, but is usually lethargic and dull; although big, he is not strong; and unless the milk be largely supplemented by Mellin's food, the infant will probably drift into rickets before he is seven or eight months old. The same may be said of other foods containing preserved milk, as Nestle's and Oettli's Swiss milk food. . . . In all cases it is desirable to revert to fresh cow's milk as soon as this can be done with

\* One teaspoonful to a teacupful of warm water is the proper strength for this age. The food should never be re-heated, but made fresh each time.

safety" (Eustace Smith). Besides this, hand-fed infants are liable to a form of scurvy, which is prevented by the use of fresh milk.

For the first two months, an interval of about two hours should elapse between each meal (p. 41), the food being administered from the feeding-bottle (p. 49), which should be kept scrupulously clean. As to the quantity required for each meal, consult p. 58.

Religiously  
avoid  
farinaceous  
foods.

The deplorable ignorance of dealing prematurely with farinaceous foods has been fully discussed at page 60, and the parent who attempts to rear her child by hand will do well to ponder the remarks there made. The temptation to resort to other foods than milk are, in hand-feeding, so great, that the practice is too frequently adopted.

If condensed  
milk used,  
early addition  
of Liebig's  
food  
necessary.

Should it happen that the use of condensed milk is compulsory, it is desirable to add to it, after about six weeks, Liebig's food for infants; or, better still because it is more palatable, Mellin's preparation of the same article.

Intermediate  
foods.

This leads us to a consideration of a class of foods not before discussed—that class which is represented by Liebig's food, and which is prepared by the aid of malt. Such foods are in the strict sense of the term "farinaceous," but viewed from a physiological standpoint they are not so. The fact is, that their farinaceous base has been so chemically treated that the greater part of the work of digestion has been performed before the food reaches the stomach,—the work of the salivary and other glands which are in abeyance in infancy (p. 62) has been accomplished artificially, and the starch has been disposed of. Thus we are introduced to a most valuable intermediate

Great  
value of.

class of food, and one which should be invariably used as the first addition to the diet at the proper time. Nevertheless none of this class is a perfect food for the infant—that is, the addition of milk is invariably essentially necessary and can never be dispensed with; nor should any of them be resorted to too early, or without some substantial reason, though Mellin's food may be used without danger from the first, if necessary. It is almost always well digested. The great dangers of the farinaceous class are removed, and amongst this class are included the innumerable so-called "infant foods."

The first few days of life having passed, the <sup>Food after  
first few days</sup> artificially-fed infant's diet should consist of equal parts of milk and lime water, to which has been added a teaspoonful of sugar of milk. Three to four ounces of the food only need be prepared for each meal.

From six weeks to three months, only one-third <sup>From six  
weeks to  
three months.</sup> of lime water or barley water need be used; and from three to five months, this quantity may be reduced to one-fourth.

The milk should be given as soon as possible after <sup>Food to be  
prepared  
freshly for  
each meal.</sup> having been prepared, especially during the hot weather, lest fermentation commence (p. 57); and for the same reason a greater quantity than is required for present use should not be made at any one time. The slightest sign of acidity calls for rejection.

The food should be warmed by dipping the bottle <sup>Should be  
warmed, how?</sup> into hot water, and not by heating over the fire, which will drive away the aromatic principles of the milk, which aid its digestion.

After two months of age, every third hour will <sup>Times of  
feeding.</sup>

CHAP. IX.

suffice for the nourishment of the child, except at night, when it should be taught to sleep undisturbed from eleven p.m. till five or six a.m.

May add  
Liebig's food.

When the milk seems not to agree altogether with the child, that is, if the infant does not thrive well, it is proper to add a small proportion of Liebig's or Mellin's food to the diet, avoiding the serious error of too great thickening (p. 76).

Only  
justifiable  
additions to  
the milk.

The only justifiable additions to the milk of an infant under six months of age, or before the period of dentition, in addition to the necessary one, water, are—(a) one of the malted foods; (b) lime water; (c) gelatine; and (d) barley water—all of which are *only* to be used in the manner described.

It has been said that barley water is to be preferred to lime water. The reason is that the former does not alter the gastric juice or impair the digestion. Lime water sometimes causes or perpetuates a diarrhoea.

Evils of too  
frequent  
feeding.

If a child be fed too constantly, the stomach will become overloaded, and the result will be the same as if it had been fed upon improper articles, viz., irritation, from which will arise many difficulties and anxieties, if not dangers. Vomiting, diarrhoea, and restlessness will supervene, and the constant crying is apt to be mistaken for hunger. Then, while the little sufferer is labouring to dispose of his last meal, another supply is forced upon him and his troubles are increased till perhaps gastritis is established.

If milk  
disagrees.

Do what we may in the above ways, which are usually successful, the milk will sometimes not agree with the child, who may suffer from vomiting, flatulence, and diarrhoea. It is then well, having first

inquired as to the times of feeding, the size of each meal, and the cleanliness of the apparatus, to try some other plan:—By re-milking the cow, after the daily supply has been abstracted, we obtain the Try "strippings," which are very rich in cream and poor in curd. By mixing this with an equal quantity barley water, of barley water we obtain a food which often proves successful, a teaspoonful of caraway water (10) being added if there is flatulency. Condensed milk, with or condensed milk. the addition of Mellin's food, is another change which sometimes effects the desired end. Should the Should diarrhoea occur. motions become persistently relaxed, it is a common and a useful practice to boil the milk; but, because it has been found necessary to do this once or twice, it should not be continued. After boiling, it is well to skim the milk; and the process of boiling, cooling, and skimming may be repeated several times with increasing advantage. A sour smell from the child's mouth, and from the rejected food, is a sure indication that fermentation is proceeding, and steps should be immediately taken to remedy a condition which may become serious. In such a case it is well at first to If acidity. try the omission of sugar from the food, to increase the quantity of water, and to add a small pinch of salt. Goat's or ass's milk may be tried, either boiled or raw, adding a little aromatic water and a pinch of soda, or older children may, for a day or two, be put upon equal parts of veal broth and barley water. Should these simple means not succeed, it may become necessary to omit milk altogether from the diet for May be two or three days, substituting Mellin's food and necessary to omit milk whey, the milk being cautiously and gradually re- altogether. introduced when the symptoms have subsided.

## CHAP. IX.

Pancreatised  
milk.

A very valuable addition in the form of pancreatised milk has lately been made by Sir W. Roberts to our means of encountering cases which obstinately refuse to digest cow's milk. The curd, which is the real difficulty, is, in this way, disposed of (*see receipt No. 9*).

Five months  
of age.

Should it not have been found necessary to give Liebig's or one of the other malted foods at the age of two or three months, it is well to introduce the child to it at about four or five months of age, that is, about two months previously to the use of flours not so prepared.

Six months of  
age.

At about six months, or the time of the eruption of the first teeth, ordinary farinaceous articles may be commenced; and concerning this class of foods there is this important point to be known,—that it is by no means immaterial which particular one of the group be selected. In milk the albuminous

The kind used  
is important.

elements are to the others as 1 to 4. Obviously we should endeavour to choose a food which most nearly approaches milk in composition, with the object of avoiding too sudden a change, or one which will tax all the powers of digestion. In wheat the proportions are as 1 to 5, in potatoes 1 to 9, in rice 1 to 10, and in arrowroot, tapioca, and sago only 1 to 20. The natural conclusion, therefore, is that wheat is the article most suitable for the purpose.

Almost any of the various kinds of flours which are sold in the market will answer very well. Those who fancy a name and a high price will find they will possess a good flour in any of the "foods for infants" which they may purchase. There is, however, one kind which deserves special mention, viz.,

“ Chapman’s Entire Wheat Flour,” because it has the advantage of containing the inner husk of the wheat, which retains some very valuable nutritive qualities (particularly phosphates). Whatever species of farinaceous food be used, only two light meals of it a day are at first capable of digestion, in addition to three others of milk. Sometimes the first use of farinaceous food is followed by constipation, a symptom which may be relieved by the substitution of a teaspoonful of fine oatmeal for the flour in the morning meal. In any case, it would seem advisable to change the monotony of the diet from time to time, substituting, for instance, Mellin’s food for Chapman’s wheat flour for a few days occasionally, and making similar simple variations.

It is still desirable to continue the addition of lime to the milk; but for travellers, or persons living in camp, the space occupied by lime water is an inconvenience which may be overcome by carrying instead a couple of ounces of the saccharated solution of lime (*see* receipt No. 2; but it is better obtained from the chemist), of which fifteen or twenty drops will be sufficient to add to each meal.

At eight months, dilution of the milk need not be continued. The two farinaceous meals, as described, should be continued.

At about nine months, a little *thin* chicken or mutton broth, or veal tea, carefully freed from all grease, may be given in lieu of one of the meals of milk; or the broth may, with great propriety, be mixed with the milk.

At ten months, the quantity of farinaceous food may be increased, and, if necessary, the yolk of one

CHAP. IX.

Chapman’s wheat flour.

Change of diet desirable.

Saccharated solution of lime saves space to travellers.

Ten months of age.

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Milk still  
necessary.Variety essen-  
tial.One year of  
age.Eighteen  
months of age.  
Meat first  
allowed.Two years of  
age.

egg may be beaten up with the afternoon milk meal. On no account should any article be allowed to supplant milk as the staple of diet. At this age the child will consume about two pints of milk in the twenty-four hours. The child is now quite sufficiently old to be capable of appreciating a variety in its food, and it will thrive all the better for it. To meet this end, instead of the egg and milk meal, broth or beef tea (receipt No. 5), and a rusk, may be allowed every alternate day; or half a teaspoonful of cocoatina (not cocoa, which is too rich) may be added to the morning meal instead of the farinaceous meal. To avoid the evil of having to give food between meals, care should be taken that a sufficiency of food be offered each time to satisfy all reasonable demands.

*After twelve months of age,* light puddings, well-mashed potatoes with gravy, or the lightly-boiled yolk of one egg may be allowed; and with meals which were before purely of milk, a rusk or a slice of stale bread, soaked in milk, may be given. The fifth, or night meal, may now be discontinued. A child should always have a drink of milk if it wakes in the morning long before its breakfast hour, or if it is sent out of doors before breakfasting, as is usually necessary in the hot weather. Milk still is to be the staple food.

At eighteen months of age, a very little meat may be allowed,—a small piece of roast mutton, without fat or grease, finely minced or pounded, is as suitable as any; or the Indian dish, "pish-pash," will prove a suitable food. A slice of good bread and butter is also admissible; but milk is to be the chief nutriment.

As two years of age are approached, the quantity

of meat allowed (about a tablespoonful of mince) may be gradually increased, but it should never be given more than once a day. As soon as it can be conveniently effected, the number of meals may be reduced to three, in addition to the cup of milk and slice of bread taken before early morning exercise.

Between two and three years the same diets may be continued, and a little stewed fruit occasionally added. As to vegetables, the potato is sufficient for all purposes till the age of three is approached, when vegetable marrow, asparagus, or young carrots may be introduced; but greens should be avoided till about four years of age.

It will be seen that the various transitions have to be effected gradually and with great caution—a remark which applies more especially to the introduction of animal food—and that milk must always be the staple food.

The habit of thorough mastication should be sedulously inculcated, and eating between meals as carefully avoided. Rest after a meal, for a short time, is always desirable, as all the nervous force is required for digestion.

Salt is an article which should be added in moderation to all meals; but children should not be allowed to devour it at an immoderate rate, as many will, if permitted.

Sugar is perfectly harmless if allowed only in moderation, but in excess it causes acidity and fermentation, and perverts the appetite. A moderate amount of ripe and digestible fruit may always with safety be given to a child over three years of age; but nuts, dried and preserved fruits (except when

CHAP. IX.  
Tea.

Alcohol.

stewed), should never be allowed. Very weak tea, largely diluted with milk, cannot do any harm after about two and a half or three years of age. Alcoholic liquors, in any form, should never be permitted to approach a child's lips, unless illness demand it imperatively.\*

\* For many of the details given in the foregoing summary, the writer is indebted to Dr. Eustace Smith's "Wasting Diseases of Children."

## CHAPTER X.

### ON VACCINATION.

CENTURIES ago small-pox had become a “naturalised plague” in England. In 1796 (the year of the introduction of vaccination) the deaths by small-pox exceeded 18 per cent. of the total deaths; about 1 to 4 of those attacked died, and more than half the blind people owed their privation to small-pox.

CHAP. X.

Dreadful ravages of small-pox prior to inoculation.

Inoculation has been practised by the Hindoos from a remote period. About 1717, Lady Wortley Montague, the wife of the British ambassador at Constantinople, had her son inoculated, and through her instrumentality the operation was introduced into England. “Then followed, under the sanction of the Royal Society, six condemned criminals; next five pauper children of St. James’s; then the children of a few families of distinction; and to crown all, their Majesties, acting on the cautious advice of Sir Hans Sloane, had all the royal children submitted to the operation” (Guy). A greatly lessened mortality followed the introduction of inoculation, but it originated many epidemics, and was a source of great danger to others who approached the patients, the most virulent form of small-pox being capable of being imbibed from the mild inoculated form.

Results of inoculation.

CHAP. X.

Jenner dis-  
covers vacci-  
nation.What is  
vaccination?Results of  
vaccination.Is inoculation  
still to be  
practised?Small-pox  
after vaccine-  
nation rare, and  
then very  
mild.

On May 17th, 1749, the immortal Jenner was born, and it was he who in 1796 discovered vaccination, which is an operation whereby "the matter which forms on the udder and teats of the milch cow is introduced into the human body; only local effects ensue, with slight feverishness; the trifling affection is not infectious; it prevents the occurrence of small-pox in the great majority of cases, and when it does not prevent an attack it mitigates its severity as certainly as does a previous attack of small-pox" (Guy). Vaccine matter is really only small-pox matter, after having passed through the body of the cow.

Writing of England, Dr. Guy says, "A fall from 3,141 per million per annum to 2,286 represents, therefore, the reduction of mortality from the reign of small-pox uncontrolled, to the rule of small-pox modified by inoculation; and from 2,286 to 272, the superiority of vaccination with State patronage and aid, to inoculation without it." For the ten years ending 1770, small-pox caused 108 deaths of 1,000 deaths from all causes, and for ten years ending 1860 it caused 11 per 1,000. In Berlin, before vaccination was introduced, 3,422 per million of the population died of small-pox; since vaccination 176 so die.

Inoculation was a great blessing, but in the presence of vaccination it is a great evil.

The powers of vaccination, like those of a previous attack of small-pox, are not absolutely unlimited. A second attack after the lapse of years is possible, though improbable; and when it does come, it is "modified," or comparatively trivial, seldom bringing danger. Even after small-pox has attacked an in-

dividual, it is a fact that vaccination still possesses a life-saving power if promptly resorted to. If such a person be vaccinated on the second day of the small-pox, it will prevent the development of the disease; if on the fourth day, the small-pox will be modified; if on the fifth day, it will be useless, because the vaccination will not have had time to arrive at that period of maturity which conveys immunity before the smallpox is developed—the latter gains the race, in fact.

Vaccination, however, like everything else, requires Imperfect vaccination. to be done well to be efficient. An operation may be performed which conveys no immunity from smallpox, and a parent may rest in a false hope that his child is safe. Again, an operation may convey only partial protection. It therefore becomes us to enquire into the proper mode of operating and the means by which we can judge of success or failure.

*Mode of Operating.*—In an out-of-the way place a Operation. medical man may not be available at the time wanted. The first thing to do is to induce the mother of some healthy child, whose arm is in a fit state (see below), If possible vaccinate from the arm. to consent to the abstraction of a minute quantity of vaccine matter. Against allowing this, some have an objection, under the impression that it lessens the potency of the protection, that it causes inflammation, &c.; but such notions are fallacies. In no Ignorant prejudices. degree whatever do such effects result. The vaccination has, by that time, affected the whole constitution, and the local interference (which is really nominal) is quite incapable of influencing the change which has been already accomplished throughout the body.

Those who prefer it may now, in several parts of India, obtain lymph from the calf direct; but, says Dr. Seaton, "If the bovine lymph be preferred for general use, it will still be well to choose humanised lymph in the case of delicate children, because of the severity of the local effects when bovine lymph is used."

The arm to be operated on having been exposed, and the child seated on its mother's lap in a good light, a couple of pricks, just sufficient to puncture its covering, are to be made in the vesicle. Immediately two drops of limpid fluid will exude. These are now to be touched with the side of the point of the lancet (which has been previously warmed in hot water and wiped dry), with which, thus charged, five

duplicate scratches are to be made, thus

on the skin, which should, at the time, be steadied by the arm being gently grasped from behind with the left hand. The scratches should be very superficial, barely sufficient to show blood. Or, a better plan, is to insert the point of the charged lancet obliquely under the outer skin. By this means the matter is received within a valvular flap, and is not so easily rubbed away.

Vaccine tubes. If it be impossible to procure a child from whose arm to obtain the matter, application should be made to the civil surgeon of the district or to the superintendent of vaccination, who will send by post a few hermetically sealed tubes containing lymph. When required, the ends are to be broken off with the nails and the contents blown out upon the lancet point. But it should be recollected that the best results are obtained by arm-to-arm vaccination.

A child should be vaccinated within the first two months of its life, if it be in good health—delay represents unjustifiable risk. The weather in India presents a difficulty at times, but not nearly so great as is imagined; the operation may be done at all seasons. If small-pox prevails in the neighbourhood, no age is too early and no state of health, except of a very serious character, nor of weather, should prevent vaccination.

The number of punctures made is a matter of the Number of greatest importance. Let all mothers bear in mind places which these two facts:—First, that in proportion to the take, important. number of vesicles which appear in response to the operation, is the general feverishness and disturbance less; and secondly, that in the same proportion is the amount of protection gained. The Medical Officer to the Privy Council reported as follows:—

Cases of Small-pox.	Deaths in every 100 cases which occurred.	Statistics to prove the point.
Unvaccinated ... ... ... ... ...	35	
Said to have been vaccinated—no marks	23.57	
Having one mark ... ... ... ...	7.73	
“ two “ ... ... ... ...	4.70	
“ three “ ... ... ... ...	1.95	
“ four “ ... ... ... ...	0.55	

How are we to know that the vaccination has <sup>Has the vac-</sup>“taken,” that is, that it is successful?—By the <sup>cination</sup>“taken”? character of the vesicle. On the second day there will be seen a slightly red elevation over each puncture, which is so marked on the third day as to enable us

CHAP. X. to say that the case is a successful one. On the fifth Course of the day there will be a raised round bleb, with a depressed vesicle. centre; and on the eighth day it is much larger, of a whitish pearl-colour, and distended with lymph,—around the whole, an inflamed blush. Lymph used for transmission to others should be clear like water; if cloudy or mixed with blood, it should be rejected. The hotter the weather the earlier it ought to be taken. In India usually about the sixth day is the best time.

Time for the abstraction of lymph. After the eighth day it is useless. After this latter period the vesicle scabs and becomes brown and hard; and about the twentieth day the scab falls off, leaving behind the vaccine "mark," which remains permanent throughout life.

## CHAPTER XI.

### GENERAL HYGIENE.

#### CLOTHING, EXERCISE, SLEEP, VENTILATION, LIGHT, AND BATHING.

SECTION I.—*Clothing.*—What are the general principles upon which a child should be clothed in India ? In temperate climates we merely have to consider how best to keep the body warm ; and for this reason we select as materials the worst conductors of heat, such as flannel and other woollen materials. During the greater portion of the year an opposite condition obtains in India,—we have to guard against heat; the skin is congested, it is irritable, it perspires freely, and evaporation is rapid. At another time of the year, particularly in the Upper Provinces, pure, dry, and piercing cold has to be encountered by the body, which has been but badly prepared by the previous heat to meet it. Again, there is the intermediate season of the rains, when the cooling of evaporation is absent, and vicissitudes are of constant occurrence. The first is characterised by the accession of heat, the second by its abstraction, and the third by the dangers which arise from chills. Manifestly, then, the clothing of the child is a matter of no small importance.

CHAP. XI.

Peculiarities  
of the seasons  
which have to  
be considered.

## CHAP. XI.

The use of materials depends chiefly upon their conducting powers.

Clothing is made of either flannel, cotton, or linen. Flannel is a very bad conductor, cotton less so, and linen still less so. Of course a bad conductor will not quickly take away the warmth of the body it enwraps, and therefore the heat is retained or kept in by the covering; but we have to admit, on the other hand, that a bad conductor will also refuse to conduct the external heat to the body, hence the wearing of a loose great coat to keep out the heat of the direct rays of the sun is no fallacy, and black, which absorbs rays, is hotter than white clothing, which reflects them.

## Objections to flannel.

Now flannel is heavy, it is irritating, and it is such a bad conductor that, although it absorbs the excessive perspiration, it does not draw away the heat from the body with sufficient rapidity. From this it will appear that flannel is not a suitable article of clothing during the hot weather, except when the person is exposed to the direct rays of the sun. In the rains, when evaporation is almost suspended, flannel is so thick that it does not readily enough yield up its moisture to the air; the body is then kept in a state of irritation and moisture, by which prickly heat and general discomfort are produced.

## Objections to linen.

Linen is objectionable, because it becomes so soon saturated, because it conducts too readily the external heat to the body, and in a current of air it parts with its moisture so rapidly as to cause shivering; whereas

Why cotton is the best. cotton is light, it is absorbent, it draws away more heat from the body than does flannel, and it leads less to it than linen; nor does it in the rains, when there is no evaporation, retain the moisture (perspiration) in contact with the body as flannel does.

So far, therefore, as the hot weather and rains are concerned, all the advantages are with cotton. In <sup>CHAP. XI.</sup> ~~Gauze flanne~~ any weather, all the disadvantages are with linen. Some of the gauze flannels which are made (being a mixture of silk and wool) almost approach cotton in their properties; but under the action of soap and water even the best of them become thick and harsh.

Even during the cold weather, cotton is the best <sup>Flannel in the</sup> ~~form~~ of clothing next the skin; flannel, once employed, is not easily left off. If its use be deemed essential, all the advantages it possesses can then be secured by using it over the cotton garment, by which means its irritating qualities are got rid of, and in this way it ought to be used in the cold weather.

During the rains or other times of vicissitudes it is impossible to be too guarded regarding the suitability of children's clothing. We know from experience how we ourselves then pass rapidly from a state of excessive heat to one of chill, and it is but reasonable to conclude that the child or infant will, in proportion to its greater nervous susceptibility, become severely affected. In fact, during infancy and childhood, nature is less able to resist the external influences of temperature than in adult age; and no greater mistake can be made than the absurd notion that exposing the limbs of tender children to cold, from which we ourselves shrink, "hardens" them; on the contrary, it is both a cruel and dangerous practice, often not expressing itself openly at the time (though it sometimes does in severe diarrhoeas, bronchitis, and other inflammations), but covertly laying the foundations of slowly-progressing wasting affections.

At night it is desirable to clothe children in

Exceptional  
care as to  
clothing  
necessary  
in the rains.

The fallacy of  
the theory of  
"hardening."

CHAP. XI.

Flannel suitable for the night.

Ability of young infant to bear heat is great.

This alters as childhood advances.

Clothing should not be frequently changed.

General effects of exercise.

flannel garments (jacket and trousers buttoned as one) because during sleep the temperature is lowered, and the punkah puller very frequently creates a vicissitude.

The power of generating heat is so small in the young infant that it can hardly be kept too warmly clad, nor does it suffer from the heat of the climate, a capacity which the child possesses in a lesser degree, and apparently loses gradually year by year. The child has, on the other hand, much less ability to encounter and resist cold than the adult, a power which it by degrees acquires.

The clothing of a child should not, in India, be too frequently changed, as is sometimes the fashion, even when it has become wet with perspiration, for the chill is very apt to be induced.

SECTION II.—*Exercise and Sleep.*—Exercise produces waste of tissue, that is, expenditure. Sleep is the time of rest, when expenditure is at its lowest point, and renovation proceeds without interference. The more exercise, the more sleep. But exercise not only causes expenditure, it also causes all the vital functions, circulation, respiration, &c., to proceed with increased activity, which means that repair is at the same time more quickly conducted. On the other hand, without exercise the rejection of the old and reception of the new materials is not effected as rapidly as ought to be the case; the old remains longer than it should, making no room for the new; hence we have flabby muscles, a pale face, and impaired health.

The young infant requires exercise, as well as the growing boy or girl. In India a baby may usually

The exercise of infants in arms.

be sent out of doors, carefully wrapped up, after it is a fortnight old. The nurse should not be allowed to sit down and gossip to her friends, as is the ayah's wont, when she takes the baby out to "eat the air," because the motion to which it is subjected by her action in walking represents to it proper and necessary exercise. Even when in the house, an infant should not be left lying too much on its back in bed, but should be carried about in the arms frequently, in slightly varying positions. Too prolonged lying flat upon the back proved to be one of the principal causes of mortality in the Foundling Hospital of Paris, by producing congestion and inflammation of the lungs, all the blood gravitating to the back of the chest. "Change of position and gentle movements are as necessary for the health of the internal organs as for muscular development" (Churchill). The clothing of an infant should always be sufficiently loose to permit of the free play of its limbs, its kicking about being exercise of an important nature.

A child should not be taught to walk; such exercise, before nature has fitted the bones to bear the weight, will do harm, and may produce deformities; rather should he be permitted to discover his own way to the use of his legs. Boisterous play is essential to the health of children; by it the lungs are expanded and the muscles of the chest—all the muscles, in fact—are brought into full action. Riding is admirably adapted for Indian children; it creates a manly spirit, and makes a thorough and exciting change in the routine of the day.

Children who are prevented from making any noise

Evil effects of  
not exercising  
young infants.

Exercise for  
elder children.

Play essen-  
tial.

Riding.

CHAP. XI.

The exercise  
should pos-  
sess interest.Sleep should  
not be dis-  
turbed.Sometimes  
early morning  
exercise is  
hurtful.European  
child is fa-  
vourably cir-  
cumstanced,in  
India, as to  
ventilation.Ventilation  
during first  
days of life.

in a house, who are restricted to a single room, and who are sent out for the dreary daily walk, do not get a sufficiency of exercise to maintain health. All children should be sent early to bed, so that they should be up and out betimes in the fresh morning air (before which they should have a cup of milk and a slice of bread). A child should not be disturbed from its morning sleep in order to send it out. Send him to bed early, so that he will awake at the desired hour himself. When a child is sickly much harm may be done by sending him out too early.

“Persons,” says Scoresby Jackson, “who are not in robust health should not, as a rule, take exercise before breakfast; a mistaken zeal on this point frequently subjects children of delicate constitution to unnecessary cruelty.” All children up to three and a half or four years of age should sleep one or two hours in the daytime; but not immediately after a meal, nor yet immediately before it. When possible, children should sleep in upper rooms which are thoroughly ventilated, but free from all draught.

*SECTION III.—Ventilation, Light, and Bathing.*—In the hot weather the European child is necessarily confined to the house during a great part of the day, but in the cold season it spends the larger part of its time out of doors, and the houses are then more or less wholly thrown open. On the whole, the European child in India is extremely favourably situated as to fresh air—a circumstance which no doubt has a great deal to do with the low death-rate of those who are well cared for.

The importance of ventilation during the first days of life has been already adverted to (page 38), but

something more needs to be said on the general CHAP. XI. subject.

The air consists of certain gases, chiefly oxygen Atmospheric air. and nitrogen, the former being its vital principle, the latter merely effecting a proper amount of dilution; keeping it at the right strength, in fact. When we breathe, the carbon from the lungs combines with the oxygen of the air, and forms carbonic acid—a gas which, in very minute proportions, about three volumes in 10,000, exists in all air for the support of Product of respiration. vegetable life; but this carbonic acid gas, when doubled by respiration, becomes very injurious to health. But besides the formation of carbonic acid gas by respiration, we also spoil the air by breathing out a quantity of animal matter, which floats about imperceptibly. The amount of carbonic acid and of animal matter always bear an exact proportion the one to the other, therefore the amount of carbonic acid being detected by the chemist, the quantity of poisonous animal matter present is also known. Now, bad as it is to breathe an air loaded with carbonic acid gas, the animal matter is really very much more injurious and dangerous. A mouse if put under a glass will soon die, because it rapidly exhausts all the oxygen from such a small space; but even if precautions be taken to supply it with a full proportion of oxygen by chemical means without permitting ventilation, death will just as certainly ensue, because it will be poisoned by the organic matter. Why air constantly breathed is so injurious.

Two poisons, then, are produced: the first, or Two poisons present. carbonic acid, is known popularly under the name of "choke-damp;" and the second is, in large quantities, as we see, a deadly poison.

CHAP. XI.

Physical  
effects of a  
vitiated air.Town and  
country air.

"The breathing of vitiated air for even a few hours produces," says Parkes, "increased temperature, quickened pulse, furred tongue, loss of appetite, and thirst, for even forty-eight hours afterwards. The continued respiration of the same quantity of air renders it at length a deadly poison."

Dr. Farr thus contrasts the effects of town and country air upon infant life :—

"In the healthy districts of the country, out of 1,000,000 born, 175,410 children die in the first five years of life; but in the Liverpool district, which serves to represent the most unfavourable sanitary conditions, out of the same number born, 460,370—nearly half the number born—die in the five years following their birth. This is 284,960 in excess of the deaths in the healthy districts."

Overcrowded  
nurseries.

English nurseries are, as a rule, tolerably well looked after, but even there overcrowding produces its effect. A report to the Obstetrical Society says, "A nursery of three or four children never does well. The air becomes foul, and they all droop and fall away in flesh, even with the best food, attendance, and cleanliness."

Results  
attained by  
improving  
ventilation.

More than half a century ago, every sixth child born in the Dublin Lying-in Hospital died within a fortnight of its birth, and lock-jaw was almost the sole cause of death. Means were then adopted to secure the efficient ventilation of the hospital, and the mortality at once fell to 1 in 20. A few years later it fell to 1 in 59, and but little more than one-ninth part of that mortality depended upon lock-jaw.

Already I have alluded to the enormous mortality of the native children of Calcutta, but the whole

state of the case is altered when the first year of life is over, and they "pass their time freely in the open air. Those who survived the suffocation of their earlier days, now show the effect of exemption from the specific diseases and misfortunes of English children, in a death-rate lower than that of England, between the ages of one and five years" (Payne).

An adult will spoil 1,000 cubic feet of air in an hour. A child, no doubt, will vitiate a smaller quantity, but the difference is not so great that it is to be practically considered. An opening  $3\frac{1}{2}$  inches <sup>Amount of ventilation necessary for each room.</sup> each side of a square, will admit, without draught, 1,000 cubic feet per hour. A chimney or another similar opening will suffice for the exit. This is the least size of ventilating opening necessary for each individual; but in India, in the cold weather, ventilation is practically unlimited. In the hot weather all the conditions which regulate ventilation in temperate climates are reversed, the hot air being without and not within the house. Although the doors must of necessity be closed during daytime, the houses are very roomy, the rooms all open into each other, the outer doors are frequently being opened, and all night every aperture is thrown open. Children should occupy the largest rooms. Drying clothes at a fire in a nursery should never be permitted. All <sup>Evils of soiled clothes in a nursery.</sup> soiled clothes and napkins should be removed instantly from the dwelling-house.

This latter is a most important matter. If the mother does not see to it herself, the ayah is pretty sure to go to very little trouble about it; indeed, the mother is often quite satisfied if the soiled napkins be removed to the other side of a bath-room curtain,

or door which is being constantly opened. Highly injurious gases are largely emitted from such soiled linen. Another filthy practice of ayahs in charge of nurseries is to empty chamber utensils upon the pucca flooring of the bath-rooms. In illustration of the very fatal nature of an atmosphere so vitiated, I cannot forbear quoting the following from Dr. Routh's work :—

Illustration quoted.

" Some years ago there was connected with the Cripples' Home an infant nursery, where babies were taken in to nurse during the day. The whole arrangements of the place were put under my care. I had an experienced nurse ; the diet was judicious to a degree. Cleanliness extreme, both in the infants, and the room, and the attendants. Yet the children did not thrive ; they died in large numbers of ' muguet ' and diarrhoea. One remarkable circumstance observed was that there was a faint odour always present in the room ; yet it was a large room, about 50 ft. to 60 ft. long. One side of the room was made up of windows, which went up about 10 feet, where the roof bevelled up in an inverted V shape, but which raised the room some 7 or 8 feet more in height at the centre.

" Do what I would, I could not get rid of this smell. One day, being much annoyed thereat, I procured some long steps, which extended some three feet above the upper ledge of the windows. On walking up, no sooner had I got my head one foot above their level, than I found a terrible odour that made me feel giddy and sick, and I was glad enough to come down. I instantly sent for a workman, and desired him to remove three or four tiles at each end of the room, on a level with the highest point of the roof. He did so. In ten minutes all smell had disappeared, but his work was no sooner ended than he was taken very ill—giddy and practically sick—so completely had he been overcome by the pestilential atmosphere.

" Some idea may be formed from this anecdote how intensely poisonous a baby nursery may become, even where great care is taken and plenty of air apparently supplied."

Soiled napkins should be at once thrown into a vessel of water kept for the purpose, and removed from the house altogether.

Children are not likely to suffer from want of *light* Light. in India; but light is sometimes too much shut out of the nurseries of the upper classes. Glare may be excluded, but not light. Want of light bleaches humanity as well as plants, and diminishes vitality.

*Bathing*.—All the evils which arise from exposure Bathing. to cold through insufficient clothing may very easily be acquired by injudicious bathing. It is not necessary to enter into a description of the innumerable pores of the skin, the necessity for keeping them free, and, through them, preserving the function of cutaneous respiration, which is absolutely essential to perfect health, because personal cleanliness in India is, on the whole, well attended to.

It is not only external dirt that has to be removed by the bath, but that portion of the internal waste which finds its way out of the body through the skin, and which, when permitted to accumulate, blocks up the pores, and forms a much worse kind of dirt. In India the skin is called upon to do more of this sort of work than in England; in fact, the skin is, in India, a more important structure.

Every morning, immediately after the early walk, Daily bathing. the child should have his bath, which should, in infancy and early childhood, be tepid, so that there be no great shock conveyed. Especially during the hot weather and rains, tepid water should be used, but the temperature should never be such as to render the bath so agreeable that the child desires to prolong the operation unduly. It is quite true that the cold

Particular  
cleanliness  
essential in  
India.

Cold water  
should not be  
used.

Objections to  
the cold bath

bath may be used by children with much less risk than by the adult ; and it is equally true that many children may with great security be bathed daily in cold water ; but, as a rule, the liability of the internal organs to congestion in India is sufficient to make it a risk. Even in a temperate climate, when for larger children the cold bath is the proper thing, there must, for the moment after bathing, be an increase of the blood sent to the liver, spleen, and kidneys ; but under such circumstances the constitutional vigour is sufficient almost instantly to re-establish the natural distribution. It is not so in India ; the internal organs cannot so readily free themselves again, and a permanent congestion may be established.

Cleansing the skin in illness. Every day, in sickness or in health, a child's body should be cleansed in every part. Sometimes it may not be possible to place a child in a bath : then it may be sponged, limb by limb. When it is not thought judicious in illnesses to run even this slight risk of chill, it is seldom that frictions with oil, a very efficient means of cleansing the skin, will not be admissible.

Depressing effect of cold bath.

There are other objections to the use of cold water for bathing children. Except when the body is suffering from the unnatural heat of fever, the effect of cold water is depressing. It is true a stimulating effect succeeds, but in order to ensure this latter it is essential that the bath be very brief, hardly sufficient for the cleansing of the skin of a child who has been actively engaged all day in a hot climate, and the dressing must be very rapid. In neither of these matters are ayahs to be trusted, and if they

are neglected, chilliness and languor ensue; that is, a weakening shock without any reaction is endured.

The water of a child's bath should never be below 70° temperature. During the first nine or ten months a blood heat is desirable. A greater heat is likely to be injurious. A very hot bath is not only injurious, but actually dangerous. Steiner mentions the case of "a midwife, who from want of proper appreciation of the temperature in which she washed the children, used it too hot, and in the course of two years among 380 births lost 99 children of lock-jaw."

If a child evinces any terror of its bath, a good plan is to place a sheet over the tub, so as to conceal the water. The child is then to be gently lowered into the tub upon the sheet.

## PART II.

### The nature, mode of spreading, prevention, and detection of the Illnesses of European Children in India.

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#### CHAPTER XII.

##### THE NATURE OF THE SICKNESSES WHICH MOST PREVAIL.

(1) ACCORDING TO SEASON. (2) ACCORDING TO AGE.

CHAP. XII.

SECTION I.—*Sickness according to the Season.*—

The statistics of soldiers' children give full information. In determining the sicknesses to which a European child in India is liable, and against which at certain seasons and certain ages it is necessary to take precautions, the statistics of soldiers' children afford reliable information, in that these children are sufficiently exposed to the climate and other peculiarities of life, and yet are not so well cared for as to influence the results of Indian residence; nor are they so very badly cared for as to vitiate the value of the lessons taught. For these reasons the following summary is based upon their records.

The most unhealthy months are July, August, and September—one-third of the total admissions and

nearly one-third of the deaths then occurred ; and CHAP. XII. December, January, and February are the healthiest months.. A gradual rise to the beginning and fall from the end of the first-named period is marked by the figures with singular regularity. The increase of mortality and sickness is coincident with the advent of extreme heat and damp. Even in England the mortality among infants is similarly influenced by extremes of temperature.

As to the kind of sickness to be apprehended and specially guarded against each month, and the attendant fatality, the following general statement will suffice for the present purpose. *January* is a healthy January. month ; but those children who, during the continuance of the rains, had been so much affected with fever or malarial influences as to have the general health injured, suffer much from the cold. In such subjects, fever is apt to return upon exposure ; or, although only a little delicate during the rains, never having had actual fever before, they may now for the first time be attacked (as frequently happens to children sent to the hills for the benefit of their health), as though the malarial poison, which before had found ready exit through the skin, is now accumulated in sufficient force to develope fever. Great precautions are, therefore, necessary to clothe such children warmly, and to prevent exposure to night air. Under undue exposure to cold, existing Spleen congestion of the spleen will increase. But it should always be remembered that the cold weather is a season of blood-making, wherefore it is incumbent upon the parent to allow his child to be as much as possible out of doors. Fevers give the greatest

The relative healthiness of each month.

Chills produce fevers.

The cold weather the season of blood-making.

## CHAP. XII.

Secondary  
malarial fever  
common.

Diarrhoea in  
abeyance.

Liability to  
chest affec-  
tions.

Measles and  
whooping-  
cough.  
Dentition  
apparently  
easy.

February is  
the healthiest  
month, but  
chest affec-  
tions common.

March.  
Effects of  
heat notice-  
able.

Measles.

number of admissions, though *primary* malarial fevers are uncommon. Next in order of frequency, we have the debilitated cases remaining from the hot and rainy weather, the cold often telling severely upon such children. Diarrhoea is, in healthy children, in abeyance, and is readily amenable to treatment. Cases of this affection now occurring are manifestly traceable to bad management, unless they be in a chronic form, and the result of malarial debility.

The child is liable to bronchitis and other chest affections, though not so much as during the rains. During this and the other cold months there is liability to measles and whooping-cough. So far as figures are concerned, dentition would seem to be peculiarly easy, but many illnesses which occur during the more unhealthy months are attributed to teething, wherefore much reliance cannot be placed upon statistics in this particular.

*February* is perhaps the most healthy month of the whole year, but chest affections are more common than at any other period, particularly among children between one and two years of age. The cold weather has continued sufficiently long to have produced marked effect, and to have diminished the number of general debility cases. Fevers are more uncommon than at any other period of the year. Head affections and convulsions are infrequent. This is a month in which the child should spend most of his time out of doors and at play.

*March*.—There is a marked increase in the number of bowel complaints. The accession of heat increases the number and fatality of convulsions and head affections. Measles becomes more frequent, but it is

not fatal. There is danger of infection of small-pox, CHAP. XII. owing to the native practice of inoculation during the cold season. The fevers increase, probably owing to <sup>small-pox infection.</sup> improper exposure to the sun. Dysentery becomes an <sup>Fever and dysentery.</sup> item of importance.

*April.*—Diarrhoea and dysentery become still more April. Diarrhoea and formidable and fatal, being four times more common than in January. Fevers continue to increase and to dysentery in- yield an appreciable mortality. Chest affections are very rare: croup is uncommon. The danger of small-pox infection continues. Cases of convulsions Sun heat pro- from the ardent fevers produced by exposure to the duces some sun are common; or, such cases running a more formidable course, may terminate as infantile paralysis or cases. rapidly as heat apoplexy. The malarial debility cases, if properly nourished, improve, on the whole.

*May* seems to be a somewhat healthier month than April. The constitutional shock of the sudden accession May. somewhat better. of heat having passed off to some extent, and the greater intensity of the heat, compelling greater care and less exposure, no doubt helps to the general result. Head affections and dentition continue to yield On the whole results very similar to those of April. Fevers retain much same as April. their April position. Dysentery and diarrhoea give about the same number of admissions, but they cause fewer deaths, by half. Chest affections are uncommon. The depressing effects of heat are much felt. The Depressing. want of house-room, or anything like overcrowding, will serve to produce very baneful effects. Great care is necessary that children get a sufficiency of air and play. They may with safety be permitted to prolong Exercise after their airing, after dusk. The mid-day sleep, in a pure sunset. atmosphere, is now very essential.

## CHAP. XII.

June.  
Marked falling off.

Is generally depressing.

Late evening exercise dangerous.

July.  
Increase of unhealthiness.

August.  
The most unhealthy month.

Bronchitis.

September.  
Some improvement.

*June.* A considerably less healthy month, the rains in the lower provinces having commenced. Measles and whooping-cough reach a climax. Fevers, and consequently debility cases, increase considerably. Bowel complaints cause the greatest loss of life, but fevers also prove fatal. Debility cases are 30 per cent. more common than in February. The cooling which was produced during the hot dry months by evaporation is absent, consequently the heat is felt to be particularly depressing ; but the air itself is cooler than it was, therefore we can and should admit fresh air more plentifully, and this is necessary to the cooling of the body. Once the rains have set in, exercise should not be prolonged into the dusk of the evening.

*July.*—Still more unhealthy. Great increase of fevers and bowel complaints. Diarrhoea, convulsions, and debility are the chief causes of death. Infectious eye complaints prevail among the natives, and are to be avoided. Cholera causes a considerable mortality.

*August.*—The most unhealthy month of the whole year, and the most fatal. Cholera rife. Diarrhoea and dysentery at their climax. Convulsions and dentition cause many deaths. Cases of bronchitis not infrequent, owing to vicissitudes, and they are prolonged by the weakened state of the constitution, and probably by night exposure. Infectious eye complaints very common. This month seems to be favourable to croup.

*September.*—An improvement in the general health. The nature of the sickness and the fatality remain much the same as in August, but the mortality and number of admissions begin to decline.

*October*.—A marked improvement. The admissions CHAP. XII. diminish by one-fourth and the deaths by one-third. October. Fevers still prevail to the same degree, and are equally fatal. Cholera mitigated. Bowel complaints diminish very greatly. The month seems to be unfavourable to the development of croup. Convulsive affections and dentition cause much fewer admissions and deaths.

*November* gives much the same general results as October. The diminution in sickness and mortality is maintained, but is not progressive; in fact, the mortality is somewhat higher, remittent fever being more common and fatal. Intermittent fevers, too, are at their height; but bowel complaints incline to diminish. Convulsions and dentition give unfavourable results as compared with the last month, probably owing to the greater proportion of fevers.

*December*.—An immense diminution in both admissions and deaths. Malarial fevers reduced by two-thirds, dysentery by one-third, and diarrhoea by two-thirds upon the rates of the previous month.

Such is a very imperfect sketch of the year as it affects the European child in India. In glancing over it, one cannot but be struck with the absence of any mention of such affections as consumption, scarlet fever, or small-pox.

A very cursory attention to these details will show that care will be able to effect a great deal—in fact, to alter the whole story from the present narration to that which Payne and Fayerer relate of the European child in Calcutta.

In order of frequency the most common diseases are—

Most common affections in order.

1. Eye affections, during the rains. These should never be known in any well-regulated nursery.
2. Diarrhoea, with the first accession of hot weather, and during the rains. Largely preventable by attention to diet.
3. Fevers, during the rains and in autumn. Preventable to a great extent by avoiding exposure, and by suitable clothing.
4. Wasting does not observe seasons, but is frequently the result of Nos. 2 or 3.
5. Measles, at the end of the cold weather. Prevented by avoiding infection.
6. Chest complaints, at the end of the rains and in the cold seasons. Prevented by avoiding exposure, and by proper clothing.
7. Dentition (so called) bears a ratio to the intensity of the heat, by which nervous susceptibility is increased. Chiefly to be avoided by preventing violent diarrhoeas and fevers.
8. Convulsions during the hot season and rains, for the same reason. Means of prevention the same.

Most fatal  
affections in  
order

The most fatal affections are in due order—

1. Diarrhoea.	8. Dysentery.
2. Convulsions.	9. Tabes mesenterica.
3. Wasting.	10. Croup.
4. Dentition.	11. Apoplexy.
5. Measles.	12. Whooping-cough.
6. Fevers.	N.B. Cholera is here omitted.
7. Chest affections.	

Difference  
between India  
and England  
as to kind of  
fatal diseases.

It is not necessary here to enter into an exact comparison between the kinds of sicknesses which prevail in India and England. In illustration, however, of

the vast difference that really exists, I may mention that in England scarlatina heads the list of fatal diseases for the 2nd, 3rd, 4th, and 5th years of life. Whooping-cough stands second for the 3rd, 4th, and 5th years. Inflammation of the lungs is third for the 2nd, 3rd, 4th, and 5th years ; and bronchitis is fourth. Now these diseases hardly count at all in the Indian bills of mortality.

SECTION II.—*Sickness according to Age.*—Regarding each period separately, we find that *under 6 months* of age the total mortality of soldiers' children is about 300 per 1,000. Diarrhoea, convulsions, dentition, and debility, at that time, cause most of the deaths ; but it is very difficult to judge how far each of these may not have been really a part and parcel of some other, for a case is naturally returned under the heading for which it came under treatment. I believe diarrhoea to be the chief originator of the others, and that the lamentable loss of life of soldiers' children even at this age is due to that truly preventable disease ; at all events, it is certain that these causes of death are rare among the English infants of Calcutta, and that if they were similarly rare among the soldiers' children, the statistics of the latter would be referred to as a proof of the healthiness of India to the European child, instead of being used, as at present, to demonstrate its unhealthiness. We have a practical reply to the questions,—Can they be removed ? Is it mere theory to affirm they can, or is it really practicable ? In short, remove this great blot, and reduce the mortality during this period to the Calcutta civilian scale, and the whole question would bear a different aspect.

Fatal sickness  
most common  
at each age.

Under six  
months.

High  
mortality at  
this age  
peculiar to the  
army.

Chief cause of  
high mortality  
of soldiers'  
children.

In a former chapter (p. 10) we have seen that 17,000 infants are sacrificed in England above the Scottish standard because of a simple difference in the matter of feeding. In this respect the soldiers' wives chiefly err. Nearly 300 of their children, out of every 1,000 born, die at this age; and of these, over 200 die from affections which are mainly preventable, representing that number of lives wasted. The practical lesson here taught is that which has been frequently inculcated throughout these pages, and which, at the risk of being tedious, I again repeat—feed a child *only* on milk till the first dentition, and let that milk be its mother's. The thick satisfying foods mean death. A child at this age is of course liable to croup, bronchitis, and whooping-cough, but these affections run a mild course in India; and there is a singular exemption from cholera.

From six  
months to one  
year.

Commoner  
diseases.

*From 6 months to 1 year* the total mortality is about 180 per 1,000. The soldier's child's chance of living is increased by about one-third upon the former period. Bowel complaints still claim a large proportion of victims, convulsions are three times less fatal, and dentition is credited with 35 deaths out of every 1,000 children. Wasting causes more deaths than at any other period of the child's life—a condition usually indicating mal-nutrition consequent upon ignorant and injudicious feeding, though some such cases arise no doubt from fever and spleen. The child becomes more liable at this age to dysentery. There is greater liability to brain affections than subsequently. In fact, the nervous impressionability is so high that teething, if there be general mismanagement, produces a large number of deaths. The

digestive organs still require tender care. The liability to chest affections is increased, and cholera comes upon the scene, though sparingly as yet.

*From 1 year to 18 months.*—Total mortality about 160. Diarrhoea reaches its highest fatality. Dysentery holds its own. Brain affections and convulsions slightly decline. The proportion of deaths attributed to “dentition” remains much as during the former period. Chest affections are more formidable than at any subsequent period, the child being able to expose itself, but not to seek protection either by exercise or intellect. To whooping-cough and measles there is full liability. To the fevers of the country there is considerable liability (16 per 1,000 dying from them). Cholera becomes much more common; and the liability to croup increases.

*From 18 months to 2 years.*—Mortality about 70 per 1,000. The mortality is reduced to one-half upon the former period; the child’s digestion being much stronger, it is able to utilise the foods which before tended to kill it; therefore we find diarrhoea reduced by one-half and dysentery by one-fourth of their former fatality. The nervous excitability is lessening, and the period of first dentition is for the most part over, therefore the danger of teething and the liability to convulsions and brain affections are much less common. The child is able to take exercise; whencefore chest affections greatly recede in number and seriousness. The cholera liability increases, but measles and whooping-cough are less fatal.

*From 2 to 3 years.*—Mortality about 60 per 1,000. The cholera mortality is doubled. Measles is more prevalent. Dysentery becomes more frequent and

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One to one  
and a half  
years.

Commoner  
diseases of  
this period.

One and a  
half to two  
years.

Bowel  
complaints  
lessened.

Two to three  
years.  
Cholera  
liability  
increased.

formidable. Diarrhœa, with increasing age, becomes less dangerous, though there is still special liability to it, and it is the principal cause of death. Chest affections are tolerably common. Convulsions and brain affections diminish much. Measles are common.

Three to four years.

*From 3 to 4 years.*—Total mortality 60 per 1,000.—Cholera liability still further increased. Measles less fatal. Convulsions and brain affections claim but few victims. Dysentery increases, and diarrhœa decreases. Chest affections much less frequent and fatal, the child being more capable of exercise and self-care. Fevers increase in seriousness.

Four to five years.

*From 4 to 5 years.*—Total mortality 30 per 1,000, or a reduction of 50 per cent. Malarial fevers prevail, and cause 6 deaths per 1,000. Diarrhœa becomes an inconsiderable item. Cholera liability continues. Convulsions and brain diseases uncommon. Croup liability continues.

## CHAPTER XIII.

### ON THE SPREADING OF DISEASE, INFECTION, AND DISINFECTION.

CHILDREN'S sicknesses of an infectious nature are CHAP. XIII. more common in England than in India,—particularly —  
is this so with regard to scarlatina and whooping-  
cough ; but we meet with all the European varieties Infectious diseases not common in India.  
in India, though to a less extent. They include the following :— Scarlatina, whooping-cough, measles, small-pox, diphtheria, typhoid fever, dengue, influenza, and erysipelas.

Some of these diseases are capable of being spread by other means than those which are ordinarily termed infectious,—as, for instance, typhoid fever through the medium of water ; and scarlatina and diphtheria have both been largely disseminated through the agency of milk, those attacked never having been near the sick individuals. \*

There are other affections which are spread almost wholly through the instrumentality of water, and are not therefore in the popular sense of the term infectious ; such are cholera, dysentery, and some kinds of intestinal worms.

Again, there are certain diseases termed malarial, which have their origin in the soil, and which are Malarial diseases.

CHAP. XIII. not in any way transferable from individual to individual.

The nature of infection.

What is infection? By the expression "infectious" we mean the capacity of a sick individual to propagate his disease to others; but of the infection itself, that is, of the actual agent, we knew very little till comparatively recently. Formerly the air surrounding a patient was known to be tainted; some impalpable change was vaguely supposed to have occurred in it. But now, through the labours of scientific men, we have been led several steps in advance. We now know that infectious diseases are multiplied by germs or seeds which are given off from those who are ill, and which, sown in the bodies of others, produce the same diseases in them.

Nature of the seed. The important points to know, are, that the infective material is a congregation, more or less numerous, of living germs or seeds; that it consists of particles which, in some cases, have been isolated, seen, and measured; and that the particles possess life. "The contagium particles in a patient's breath resemble an enemy's bullets. The breath would be harmless without the particles, just as an enemy's powder would be harmless without his bullets" (*Med. Chir. Review*, 1877).

Tyndall's description. \* Professor Tyndall states the case thus plainly and popularly:—

"From their respective viruses you may plant typhoid fever, scarlatina, or small-pox. What is the crop that arises from this husbandry? As surely as the thistle arises from the thistle seed, as surely as the fig comes from the fig, the grape from the grape, the thorn from the thorn, so surely does the typhoid virus increase and multiply into typhoid fever, the scarlatina

virus into scarlatina, the small-pox virus into small-pox. What is the conclusion that suggests itself here? It is this,—that the thing which we vaguely call a *virus* is to all intents and purposes a *seed*: that in the whole range of chemical science you cannot point to an action which illustrates this perfect parallelism with the phenomena of life—this demonstrated power of self-multiplication and reproduction. There is, therefore, no hypothesis to account for the phenomena but that which refers them to parasitic life."

Each kind of contagium particles requires its own peculiar kind of nourishment. Thus, measles attacks a patient who has never had the disease before; it feeds upon those elements of his body and blood essential to its nourishment; it exhausts the body of its special food, making it impossible for another germ of the same species to grow in this exhausted soil; and thus, as a rule, removing the possibility of a second attack of this kind of disease. The food which is required for the germs of those diseases which occur only once in a lifetime, is of a nature that, when once abstracted from the body, it is not reproduced.

Why the  
specific fevers  
do not recur.

The poisons of some diseases are very easily got rid of by ventilation alone; but the viruses of such affections as small-pox and scarlatina will spread in spite of the freest ventilation, and finding appropriate resting-places, they may lie dormant for long periods. The membrane of diphtheria and the skin-scales of scarlatina may be exposed to dry air for weeks, and still retain their potency. Cases are on record where for years old and uncleaned walls have retained and propagated small-pox.

The modes by which the disease germs enter the bodies of previously healthy persons are numerous. How the  
germs enter  
the body.

body, pass into the air which may be breathed; or, from the air they get into water or milk or other food, and thus gain access to the stomach; or they may light upon a broken surface, such as an ulcer or a wound, as occurs in cases of erysipelas.

How given off from the sick.

The giving off of the infection takes place most actively from those parts of the infected individual's body which are the chief breeding-places of the particles. Thus, from the skin and expectoration in measles; from the mattery discharge and skin in small-pox; from the mouth and skin-scales in scarlatina; from the stools in typhoid fever; from the vomited matter and stools in cholera; and so with others.

Infection through human agency.

The ways in which diseases are spread through human agency are almost innumerable. The dhobee, if permitted to wash for others, may disseminate small-pox or scarlatina. The tailor, who is allowed to take away work to his wretched hovel, may ply his needle close to diseased persons. Convalescents too early coming into contact with the healthy afford the most common means of propagation.

The object of disinfection.

The living nature of the disease particles being understood, it becomes quite evident that if we can destroy them or their vitality before they find an appropriate soil for their further growth, we prevent the spread of the particular disease. To accomplish this end we endeavour to deal with the poison at the seat of its origin, as far as it may be accessible to disinfectants, in conjunction with other preventive measures, such as ventilation, and guarding against the entrance of the poison into water; but as these matters cannot well be separated, they had better be

discussed in detail under the heading of each disease in the next chapter. We must, however, also adopt general measures, and of these we now proceed to speak.

*As to the sick room.* An abundance of fresh air should be admitted. A large room selected, no curtains, carpets, or tablecloths allowed; light should be admitted freely, unless the nature of the case requires otherwise; slops and stools should be instantly removed; soiled linen should be placed at once in a solution of lime chloride. As little communication as possible allowed between the sick and other inmates of the house. Other children should be removed to a distance; and should the patient die, speedy interment should be adopted.

*Disinfection of the empty room.* After removal of the patient, all windows should be thrown open, all woodwork should be thoroughly washed with soap and water to which carbolic acid (1 pint to 4 gallons) has been added, and the furniture afterwards removed into the open air. All fabrics should be placed in the solution of chloride of lime in the room, and then removed from it. The walls should then be brushed, and when the dust has blown away or subsided, every window and door should be carefully closed. Then a sufficiency of sulphur (Gunduk) should be procured and placed in different parts of the room upon open earthenware dishes, and set alight. The quantity of sulphur required will be about 1 seer for every 1,000 cubic feet of space (a cube measuring 10 feet in all directions). For about 4 hours the room should be kept closed; then throw it open for 24 hours. If the walls are whitewashed,.

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they should be scraped and re-washed, carbolic acid having been added to the whitewash.

Disinfection  
of clothing  
by heat.

Soaking.

Fumigation.

Suggestions  
by the  
Schools  
Association.

*Disinfection of Clothing.*—Compressed steam, when available, Dr. De Chaumont says, is the best means of accomplishing this; an extremely high dry heat is also a very efficient mode; but except in large towns, where a special apparatus exists, these plans are usually impossible. A baker's oven might be improvised, by placing sand upon its floor to prevent injury to the clothing, which may be suspended upon lattice-work within the oven. But by properly conducted soaking and boiling, the object may usually be effected. By adding 1 gallon of the strong commercial solution of chloride of lime to 20 or 30 gallons of water, or adding 6 oz. of the powdered chloride to a gallon, or making a solution of carbolic acid (1 pint to 100), we get a good solution, in which clothing should be soaked for 24 hours, after which it should be boiled and dried. But these solutions will injure delicate fabrics. Fumigation with sulphur is another method of purifying clothing. The articles should be suspended in small closed chambers, and a large quantity of sulphur set on fire beneath them. Mattresses should be pulled to pieces, and their interiors destroyed by fire or thoroughly fumigated.

The following summary\* may be usefully inserted here:—

**DISINFECTION.**—A few suggestions as to the means for carrying this out effectually will not be out of

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\* Appendix B to “A code of Rules for the prevention of infectious and contagious diseases in schools, being a series of resolutions passed by the medical officers of Schools’ Association.” (J. and A. Churchill, London).

place in connection with the management of infectious cases.

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I. CARBOLIC ACID.—Useful for disinfecting sinks, w.c., &c. (a wineglassful to half a pint of warm water); and for washing walls, furniture, &c. (a wineglassful to a pint and a half of water). Also used as spray (1 in 40), as soap (10 per cent.), and as carbolised oil for anointing the skin in scarlet fever (1 in 60).

II. CHLORIDE OF LIME (Bleaching Powder).—Must be kept in a dry place. Add 1 lb. to 1 gallon of water for sinks, w.c. drains, &c. A weak solution (1 oz. to 1 gallon of water) may be used for *quickly* rinsing soiled linen before being wrung out in clean water.

III. CONDY'S FLUID (Permanganate of Potass).—For sinks, utensils, washing floors, &c. (one teaspoonful to a pint of water, or one wineglassful to a gallon). The solution is useful *only* so long as it retains its pink colour. Linen should be *quickly* rinsed in it, lest it become stained.

IV. SULPHATE OF IRON (Green Copperas).—1 lb. dissolved in 1 gallon of water for drains, utensils, w.c., &c.

V. SULPHUR (Sulphurous Acid Gas).—For disinfecting unoccupied rooms. Tightly close windows, ventilators, fireplace, &c., pasting slips of paper over cracks if necessary, and stuffing a sack of chaff or shavings up the chimney. Care must be taken to employ *enough* sulphur (1 lb. to each 1,000 cubic feet of space—PARKES), and, if the room be a long one, the sulphur should be divided into two or more portions. Place the sulphur in a tin or iron dish, large enough to hold it all when melted; place the dish on a brick or other support in an iron pail or common earthenware pan; pour some water into the bottom of the pan, to receive any melted sulphur which may run over. The sulphur is then to be ignited (by pouring a little spirit of wine on to it and lighting it), the door closed, and the room left for eight to twelve hours. The room may then be cautiously entered, windows, &c., opened, fire lighted, and the walls, furniture, &c., washed with the dilute carbolic solution, or with hot water and carbolic soap.

VI. CHLORALUM is also useful. TEREBENE and SANITAS (fluid

— CHAP. XIII. and powder) may be conveniently employed in the sick room and about the patient.

VII. Hot AIR.—Wearing apparel, bedding, &c., must be baked at a temperature of 220° to 300° F., for at least one hour.

VIII. HOT WATER.—All linen suspected of infection should be *boiled* at the wash. Superheated steam is used for disinfecting clothing, bedding, &c., by means of special apparatus.

N.B.—*Carbolic Acid* and *Sulphurous Acid Gas* may be used together, but neither should be used with Condy's Fluid, Chlorine Gas, or the Chlorides (as Chloride of Lime).

All Disinfectants should be regarded as Poisons.

## CHAPTER XIV.

### THE CAUSES AND PREVENTION OF THE MORE COMMON DISEASES.

“ THERE are two modes,” says Dr. Parkes, “ by CHAP. XIV.  
How to prevent disease. which we may attempt to prevent the occurrence of disease.” 1. By conforming with the general rules of hygiene, by which the health is maintained at the point most capable of resisting disease. 2. By investigating and removing the causes of disease. The<sup>\*</sup> precise cause of some diseases is not perfectly understood. Then “ we must act, as in so many other affairs, on probability, and endeavour to remove those conditions which, in the present state of our knowledge, seem to be the most likely causes.”

ATROPHY OR WASTING.—This condition is perfectly curable at any stage “ by conformity with the general rules of hygiene,” more especially those laws which have been explained in chapters VI. and IX. Atrophy is not a disease, it is merely a symptom, and in the case of young infants it is, in the great majority of cases, a symptom of mal-nutrition. Extreme Symptoms. thinness, absence of fever, a yellow dry skin, cold hands and feet, whining, griping, often a ravenous appetite, and not infrequently diarrhoea and vomiting are the symptoms. Something is pretty certainly wrong with either the quantity or quality of the food,

CHAP. XIV.  
Causes.

and it has been already explained that either error means starvation, or starvation *plus* irritation. Chills, overfeeding, or a dirty feeding bottle may produce symptoms of gastric and bowel derangement, which, if not properly managed, may occasion rapid wasting.

Management. A child who obtains its nourishment from a nurse whose child is much older may so suffer. All these points have been separately dealt with in chapters V., VI., and IX.

Atrophy  
in older  
children.

When older children waste away they should be examined for rickets or mesenteric disease, and when still older (after five), consumption, diabetes, and worms should be thought of.

Malaria.

MALARIAL FEVERS.—Malaria is that condition which makes the climate of India so obnoxious to the European. By numerous observations it has been established that some aërial form material of a

An emanation  
from the soil. poisonous nature is exhaled from marshy or wet grounds in the process of drying. A high temperature, under certain conditions of moisture, is evidently necessary to its extrication and development. These conditions we have in India, to perfection, during the autumn months.

May be intro-  
duced through  
drinking  
water.

There is also some strong evidence tending to prove that drinking water from a marshy soil is capable of introducing the poison into the system.

“One very important circumstance is the rapidity of development of the malarious disease, and its fatality when introduced in water,” observes Parkes, after an analysis of the evidence on this point.

Air of  
marshes.

The air of marshes is proved to contain a considerable quantity of organic matter (of plants, animalcules, and insects).

We see, then, that there are two modes by which the poison may be introduced into the system,—viz., through the air and through water.

As to the latter, or water origin, the dangers (the usual precautions being observed) are not great. <sup>Water not a source of great danger.</sup> The water of wells is supposed to be safe, but it may be otherwise if the well exists in low-lying, swampy ground. The water of tanks is not so safe; but we possess such easily applied and thorough means for its purification (pp. 67, 68), that there remains no excuse for the consumption of a dangerous water, except among the extremely poor. The examination of the source of supply, filtration, and attention to the details laid down at p. 66, are the simple and efficient means of prevention.

As malaria does not naturally exist 3,000 feet <sup>Prevention.</sup> above the sea-level, where there are no marshes, removal to such a height, when it can be adopted, is an obvious means of prevention. When the locality cannot be left, the choice of a well-ventilated house, which is raised some feet from the ground-level, situated on the highest attainable spot, and removed as far as possible from marshy ground, is a matter which should not be neglected. Dense herbage in the compound should not be allowed, though trees, which do not impede the ventilation of the house or of the soil, are beneficial. Indeed, belts of trees between a marsh and a station are a recognised mode of preventing the access of the poison. During damp weather the very early morning and night air should be avoided. Chills undoubtedly are capable of developing fevers of this type; but it is not generally believed that they, without the previous imbibition of <sup>Chill as a cause of fevers.</sup>

the poison, can of themselves originate a malarial fever or condition. They do not do so in temperate climates, but they certainly are an exciting cause in India (p. 115). The administration of quinine in small doses is the only preventive known, so far as medicines are concerned. Warm clothing, observance of the precautions above enumerated, and the partaking of food before exposure, are other and important accessory means.

Cholera but  
very slightly  
infectious.

Yet may be  
spread from  
person to  
person.

The evacua-  
tions the great  
means of  
spreading.

CHOLERA.—All evidence opposes the idea that cholera is infectious, *i.e.*, that its poison is exhaled from the body. From this it might be thought that the cholera patient may be approached with impunity. This is not so, for it is most certain that the motions and vomited matters of cholera patients are the most powerful means of conveying the poison. "It cannot," says Mr. Simon, the medical officer of the Privy Council, "be too distinctly understood that the person who contracts cholera in this country (England) is, *ipso facto*, demonstrated with almost absolute certainty to have been exposed to excremental pollution; that that which gave him cholera was (mediately or immediately) discharged from another's bowels; that, in short, the diffusion of cholera among us depends *entirely* upon the numerous filthy facilities which we let exist, and especially in our larger towns, for fouling of earth, air, and water; and thus, secondarily, for the infection of man, and whatever contagion may be obtained in the miscellaneous outflowings of the population." Therefore, when treating a cholera patient, the destruction and disposal of the evacuations should receive special attention (p. 138). When a cholera

patient vomits, or when he passes his watery stools, CHAP. XIV. these matters soon dry up and become capable of Spread through the stools and vomited matters. diffusion in the air, whence they may enter the bodies of other persons, or, adhering to their clothes, they may be carried about: hence it is By air. necessary to avoid those who are stricken with the disease; and children should be removed from the vicinity. But the particles may be conveyed into drinking water, or into food, as well as into the Or food. lungs, in the manner mentioned, whence they may obtain access to the bodies of others. The chances of imbibition through the air are small, if we Attendants seldom attacked. judge by the very small number of attendants upon the sick who are attacked. Spreading through the medium of water is the most common. Numerous By water. facilities for the pollution of water exist in India. Macnamara has shown that when cholera stools are added to water, the water becomes capable of disseminating the disease, when certain microscopical forms of animal life appear; but not till then, and not after their disappearance. The cholera poison Period of activity of the germ. is capable of preservation in an active state for a very long time if kept dry, as it may be in soiled clothing, Vitality great. or in the soil. When it gains access to a suitable place its virulence is called forth. Such, in a few simple words, are the conclusions to which laborious investigation has led.

The measures for prevention are, therefore, obvious. Prevention. (a) Firstly, the most scrupulous attention should be paid to the drinking water, the precautions detailed at pp. 67 and 68 being sedulously carried out. "If," Purity of water. writes Dr. Macnamara, "we can only establish the principle that nothing but freshly and properly

CHAP. XIV.

Of food.

Avoid contact.

Check early diarrhoea.

Disinfection or the evacuations.

filtered water shall be consumed by the inhabitants of a town, barrack, or house, not only when at home but when at work—at all times, in fact, when cholera is abroad,—we may, I believe, discard all and every other means of preservation.” (b) The sources of the food supply should also be carefully attended to. Foods should not be procured from infected neighbourhoods if they can be got elsewhere. Milk should not be procured from an infected bazaar, but the cows should be milked at the door. The possible contamination of milk with foul water should be recollected. (c) Should it have been necessary to touch a cholera patient, the most careful ablution of the hands should follow every such contact. Great care should be observed that the fingers be not inadvertently conveyed to the mouth after touching a patient or any article which had been in his use. (d) As diarrhoea has been proved to increase the predisposition to cholera, all irritating articles of food should be avoided during a cholera period, and all diarrhoea ought to be at once checked by astringents. (e) But most important of all is the destruction by disinfectants of all evacuations both from the mouth and bowels. These should be received into earthenware vessels containing earth. The moment the evacuation is thus received it should be treated with a strong disinfectant, added without measurement and with a most liberal hand, such as very strong solutions of carbolic acid, or chloride of lime, or chloride of zinc. Sulphate of copper or sulphate of iron, both of which are obtainable in the bazaar, may also be used ; or, in the absence of any of these, quicklime should be employed. The next

thing to do is to dispose of the disinfected evacuation, which is still to be considered dangerous, though possibly it may not be so. Destruction by fire is the best means. Deep burial in the soil, at a distance from any source of water supply, is the next safest course. (f) The clothing worn by the patient should either be destroyed by fire or thoroughly disinfected (p. 130). Robustness of health is no safeguard against cholera. Quinine is supposed by some to act as a preventive, but this is far from proved.

Disposal of the evacuation.

Good health no safeguard.

Quinine.

THE ERUPTIVE FEVERS.—As to the prevention of small-pox, the reader is referred to the section "Vaccination." Of the other fevers of this class we know very little regarding their prevention, further than that good sanitary conditions lessen the chances of infection. Avoidance of a source of infection is an obvious measure; and the isolation of the sick, an imperative duty. An equally needful precaution is the adoption of the measures detailed (pp. 129, 130) regarding the management and disinfection of the sick room and clothing.

General preventive measures.

In addition to the above, the following special measures ought to be carried out during the progress of cases.

*Measles.*—The skin should be daily rubbed with oil, or camphorated oil, as soon as scaling commences, and the application should be continued until the surface has wholly resumed its natural appearance. The expectoration should be received in a vessel containing Condy's fluid, or a solution of carbolic acid, and the clothes should be disinfected before being sent to the wash.

Special measures.

*Scarlatina.*—The throat and the skin are the points Scarlatina.

CHAP. XIV.

Special measures

to attack in attempting the disinfection of this most infectious disease and subtle poison. From the commencement the skin should be rubbed with oil, or with earbolie acid, 1 part, in olive oil 50 parts (one tablespoonful sufficing for the whole body), with the object of preventing the breaking up of the minute seales and their diffusion in the air. All expectoration should be received in a vessel containing Condy's fluid or sulphurous acid. Gargles of salicylic acid should be constantly used. The strictest isolation and freest ventilation are imperatively called for. The clothing and bedding had best be burnt, but if this be objected to they must be disinfected (p. 130).

Small-pox.

*Small-pox.*—Oily inunctions will be found both useful in preventing infection, and grateful to the feelings of the patient. The wonderful length of time which the germs of small-pox will retain their potency should be borne in mind as regards the thorough disinfection of every article of the patient's clothing, and of the room he has inhabited. Even after the actual advent of the disease, vaccination, if promptly resorted to, may prevent the development of the disease (p. 97).

Special measures.

Whooping-cough.

**WHOOPING-COUGH.**—Avoidance of those suffering from this highly-contagious affection, and the isolation of the infected, are the only known means of prevention of spreading.

Typhoid fever.

**TYPHOID FEVER.**—In this affection the poison enters the system in much the same manner as does that of cholera,—chiefly through polluted water. There is also evidence to lead to the belief that it may emanate from the decomposition of the contents of cesspools

Mode of spread.

or other places where ordure is allowed to remain and putrefy. The medium, then, is either air or water. Of late there have been many instances of the multiplication of the disease through the agency of milk which has either been diluted with infected water, or allowed to stand in dairies, in close proximity to patients suffering from the disease.

A well, for instance, in the neighbourhood of a cess-pit, or of a place which formerly had been a cess-pit, may yield a typhoid-producing water. Though the disease, if at all contagious in the ordinary sense of the word, is very slightly so, yet when introduced into a household or village it shows a decided tendency to spread, just as cholera does. It is very certain that a privy used by a typhoid patient becomes a source of danger to healthy persons who resort to it; the dried-up discharges polluting the air, the germs gain access to the bodies of others and infect them.

So clearly demonstrated are the above means of propagation, that Sir Thomas Watson "cannot help son's opinion. entertaining a doubt whether the disorder really ever has any other origin."

It becomes clear, this being so, that attention to the water supply, its source and filtration (p. 66), and the disinfection of the bowel evacuations (p. 138), are the measures preventive of spreading. "Be lavish," says Budd, "in the use of chemicals rather than run the terrible risk of failing by default."

A privy or water-closet used by an infected patient should be thoroughly sluiced and disinfected. In fact, all the precautions called for in cholera are here just as applicable.

CHAP. XIV.

Does this mode of spreading account for its general diffusion?

To the unthinking it may seem almost ridiculous to suppose that such widespread diseases as cholera and typhoid fever are spread almost exclusively through the medium of the bowel evacuations; but, writes Dr. Budd, "every year in England more than 100,000 human intestines, diseased in the way already described, continuo each, for the space of a fortnight or thereabouts, to discharge upon the ground floods of liquid charged with matters on which the specific poison of a communicable disease has set its most specific mark."

Dysentery and diarrhoea. Causes.

The effluvium of stools particularly pernicious.

Prevention.

Disinfection and fumigation.

Avoid irritating food.

Scorbutic bowel diseases

**DYSENTERY AND DIARRHOEA.**—The causes of these bowel complaints may be briefly stated to be the following:—(1) Impure water, which may bring on either complaint in children very readily. The greater the amount of organic impurity, the greater the chances of dysentery as opposed to diarrhoea. The selection of a good water and filtration (pp. 66, 67) obviate this danger. (2) Impure air is a well-known cause; particularly noxious is the air from sewage matter, the effluvium of privies and cesspools; but "of all organic effluvia those from the dysenteric stools appear to be the worst" (Parkes), wherefore it is most important that dysenteric evacuations be rapidly disinfected (p. 138), and that they never be retained longer in the house than actual necessity demands. The fumigation (p. 129) of rooms in which dysentery patients have been treated ought always to be carried out. (3) Improper food may directly cause bowel complaints by producing irritation, and indirectly by mal-nutrition of the body, whereby an unhealthy state is engendered, which is likely to expend its force upon the bowels. The denial of vegetables and fruits from the diet, for instance, is very apt to engender a scorbutic taint, which will induce dysentery of a most unmanageable nature.

(4) Exposure to wet and cold frequently causes such CHAP. XIV. congestion of the bowels as to produce diarrhoea, if Exposure to not a state of inflammatory dysentery. (5) Malarial wet and cold. poisoning is often attended with diarrhoea or dysentery. In such a case the only means of prevention Malaria. is to treat the malarial state.

HEAT APOPLEXY AND SUNSTROKE are caused by Causes. excessive heat and stillness of the surrounding atmosphere, or by direct exposure to the sun. These causes may also produce serious fever. Exhaustion during exposure to heat increases the liability. The Prevention. means of prevention are—(1) to prohibit exposure; (2) to arrange the clothing rationally, taking care to allow the chest full play, and carefully to guard the head and neck from direct solar heat; (3) to allow plenty of cold water at all times for drinking, as being a powerful means of reducing body heat by its direct cooling effect, and by increasing perspiration and evaporation.

OPHTHALMIA is a very contagious dirt disease. The matter secreted by the eyes of the sick, rapidly dries, and the small fragments may be blown into the eyes of others—a direct inoculation, in fact. Avoid- Prevention.ance of any source of danger is the plain precaution; but should it occur in a household it may usually be prevented spreading further by taking precautions that towels or water which have been employed to wash the sick be not used for the healthy—a matter in which native servants are not to be trusted; that the sick be segregated as far as possible; that the freest ventilation be adopted, and the utmost cleanliness observed.

CONVULSIONS.—The most common causes are—(1) Causes.

CHAP. XIV. improper food, and (2) fevers occurring during the early years of life. As to the first of these causes Sir Wm. Jenner writes of the children of the poor :—

Jenner's account of the rearing of the children of the poor.

“For the first two or three days after birth their tender stomachs are deranged by brown sugar and butter, castor oil and dill water, gruel and starch water. As soon as the mother's milk flows, they are, when awake, kept constantly at the breast. And well for them if they are not again and again castor-oiled and dill-watered, and even treated with mercurials, for the poor have learned the omnipotent virtues of grey powder. After the first month bread and water, sweetened with brown sugar, is given several times a day, and during the night the child is, when not too sound asleep, constantly at the breast. As soon as the little ill-used creature can sit erect on its mother's arm, it has at the parents' meal-times ‘a little of what we have,’—meat, potatoes, red herrings, fried liver, bacon, pork, and even cheese and beer daily, and cakes and raw fruit, and trash of the most unwholesome quality; as special treats and provocations to eat when its stomach rejects its ordinary diet.”

Prevention.

By such treatment attacks are frequently induced directly; or indirectly, by producing diarrhoea and consequent debility and bloodlessness. Adherence to the rules of diet already laid down is the means to prevent this catastrophe. As to the second cause, the measures detailed for moderating the temperature of the body in fevers (chap. xvi.), are the only pretty certain means of prevention.

*Intestinal Worms.*—The worms which may infest the bowels of children are of several kinds (*see Worms*).

Mode of propagation.

As to the *thread* and *round worms*, there is little doubt that the young escape from the eggs soon after the latter are expelled from the bowel, and gain access to the human body with drinking water or

Thread and round worms.

uncooked vegetable food, and there they propagate CHAP. XIV. themselves.

As to the *tapeworm*, its early history has been accurately observed. Each segment of the worm (being bi-sexual) is fitted for reproduction. An impregnated segment becoming detached is expelled from the intestine. After a time it bursts and allows the escape of little embryos, each of which is provided with a boring apparatus having three pairs of hooks. These may be eaten by some animal, say a rabbit, or a pig, or an ox, with its food. Once inside the body of an animal, the embryo proceeds to lodge itself in the flesh by boring, and having selected a satisfactory home, it drops its hooks and undergoes transformation into a bladder-like form, producing the affection which we know as "measles" in the pig. When this measly flesh is eaten, the creature attaches itself to the inside of the human bowel, where the peculiar nutriment it meets with, causes it to develop into a tapeworm. Many animals besides man are subject to tapeworms, and help to propagate the parasite in the above-described manner.

Having regard to the development and manner in which intestinal worms gain entrance, the obvious means of prevention include (1) the purity of the drinking water; (2) the thorough washing of all uncooked vegetables with a *stream* of pure water, to carry off all deposits from the surface; (3) the thorough cooking of all meat; and abstention from the flesh of the pig; (4) the daily use of salt with the diet is also found useful.

On other important points, I cannot do better than

CHAP. XIV. quote again from the resolutions of the Medical Officers of Schools Association.\*

Length of quarantine.

“ XII.—The following quarantine times, after exposure to infection, may be considered safe *if thorough disinfection be carried out on the pupil's return to school* :—

“ Diphtheria	...	...	12 days' quarantine.
Scarlet fever	...	14	“
Measles	...	16	“
German Measles (Rötheln, or Epidemic Roseola)	...	16	“
Chickcn-pox	...	18	“
Small-pox	...	18	“
Mumps	...	24	“
Whooping-cough	...	21	“

Home disinfection.

“ 2. Disinfection at home should not be relied on, but immediately on his return to school, the pupil should be washed with carbolic acid soap (10 per cent.), from head to foot, in a hot bath; and clothes, books, and everything brought back by him should be completely disinfected.

How soon a patient may return home or to school, after having had an infectious disease.

“ XXI.—With regard to that most important question, ‘When may a pupil who has had an infectious disease go home, or rejoin the school?’—the following are safe rules to adopt, provided patient and clothes are *thoroughly* disinfected.

“ A pupil may go home, or rejoin the school, after :—

Scarlet fever.

“ Scarlet fever—in not less than six weeks from the date of the rash, *if* desquamation have completely ceased, and there be no appearance of sore throat.

Measles.

“ Measles—in not less than three weeks from the

date of the rash, *if* all desquamation and cough have CHAP. XIV. ceased.

“ German measles (Rötheln, or Epidemic Roseola)— German measles. in two to three weeks, the exact time depending upon the nature of the attack.

“ Small-pox and Chicken-pox—when every scab has Small-pox and fallen off. Chicken-pox.

“ Mumps—in four weeks from the commencement, *if* Mumps. all swelling have subsided.

“ Whooping-cough—after six weeks from the commencement of the whooping, provided the characteristic spasmodic cough and the whooping have ceased ; or earlier, *if* all cough have completely passed away.

“ Diphtheria—in not less than three weeks, when Diphtheria. convalescence is completed—there being no longer any form of sore throat, or any kind of discharge from the throat, nose, eyes, ears, &c., and no albuminuria.

“ Ringworm—when—the *whole* scalp having been Ringworm. examined in a good light, and any suspicious spot scrutinised with a lens—no broken-off stumpy hairs (which give evidence of the ringworm fungus when carefully examined under the microscope) are to be detected.

“ 2. It is sometimes considered that ringworm is cured when the hair commences to grow on the diseased places, but this is a mistake, for it frequently happens that diseased broken-off hairs remain ; and the disease may thus exist for months or years. It is often very difficult to detect the short stumps which protrude only a sixteenth or an eighth of an inch ; and it is quite useless to examine short cut-off healthy hairs from a suspicious spot, under the microscope, for the ringworm fungus.”

## CHAPTER XV.

### THE EXAMINATION OF SICK CHILDREN.

CHAP. XV.

Difficulties.

The mother  
the best  
observer.

Firmness of  
the muscles  
and flabbiness.

A YOUNG child no more understands what sickness is than that the world is round. When it first becomes ill it simply feels a strange sensation, but it is really aware of nothing. Information is only to be gained by observation, and whose observation can be so accurate as that of those who know its daily habits, and watch its every movement habitually? A strange voice, the very act of looking at it, may frighten a child greatly; while actual attempts at examination are resented in a way which very often makes investigation impossible. Before a doctor can do anything with a child he must gain its confidence, otherwise he is not likely to succeed; but in the mother the child reposes all confidence; to her he looks for protection, to her he clings when alarmed. It is the mother who is really favourably circumstanced to observe the first signs of illness.

A healthy child's limbs should feel firm and elastic. In acute diseases there is a sudden pause in nutrition, the first result of which is a soft condition of the muscles; rapid loss of flesh succeeding, if the disease is not checked. In chronic disorders, a loose flabbiness of the muscles, the result of diminished

nutrition, is observed to come on gradually, and to be succeeded by slowly progressive emaciation.

CHAP. XV.

Habitual coldness of the extremities (hands and feet) shows an unnatural feebleness of circulation.

Cold hands and feet.

It has before been shown that the nervous excitability of infancy and childhood is great. In a healthy child, who suffers from an acute febrile disorder, this excitability is still further heightened; and hence we have an unusual liability to convulsions. But a child who has been reduced by mal-nutrition or otherwise, loses to a great extent its nervous excitability, so that illness creeps upon it almost unobserved, the symptoms being obscured by a sort of apathy of the system, as it were.

Nervous excitability increased in the healthy and depressed in the sickly child.

The general *demeanour* and the *expression* of face will frequently give the first signal of indisposition. A flushed or very pale face, a disinclination to play, unusual crossness, and a disposition to loll about, are signs which bespeak illness. When there is abdominal pain or inflammation, a child will lie upon its back with its knees drawn up; and the under lip is then drawn in, very often. The contracted brow, with pulling at the ears, tells us that there is headache. A general restlessness, with periods of prostration, a drawing in of the thumbs upon the palms of the hands, and a tendency to frequent startings, would induce us to apprehend the approach of a convulsion. Squinting, should it come on while the child appears to be generally out of health, should always be seriously regarded. The expression of a child suffering from bronchitis or inflammation of the lungs can scarcely be mistaken by those who have any experience,—the dusky colour, the quick breathing, the parted lips and

The demeanour and expression.

dilated nostril. A child will frequently grasp at a sick part, as, for example, at its throat in croup. Lividity of the lips and around the eyes indicates imperfect aeration of the blood; but a faintly darkish tint of the eyelids and around the mouth indicates nothing more than a weak circulation, or perhaps only a bad digestion in a weakly child.

**The fontanelle** *The fontanelle* is the opening which exists between the bones of the head of an infant. When in any illness the skin over this opening is felt to be depressed or saucer-shaped, we may be sure that the child is suffering from severe exhaustion, and that it stands in need of stimulants and supporting nourishment. On the other hand, should the fontanelle bulge upwards, and be felt to throb with force, there is probably congestion of the brain, and then we use purgatives, cold to the head, and baths.

**The cry.** *The cry* of a healthy child—loud, broad, and vigorous—cannot be mistaken; the repeated shrill, piercing shriek of the child in whose head mischief is working is quite characteristic. The long, low whine of irritation which accompanies deeply-seated inflammation, and which no tenderness or care can subdue, is equally well known. A vigorous fit of normal crying, which petting will not overcome, is usually occasioned by flatulency or pains in the stomach. An infant sheds no tears till it has reached 3 or 4 months of age; but once the secretion has been established, their disappearance during crying in illness is a sign of some seriousness of import. On the other hand, their reappearance, after temporary cessation, is a sign of commencing recovery. Earache is very common in infants, and is a frequent cause of persistent shrill crying.

A perfectly tranquil *sleep* is natural to infancy; unquiet sleep, with tossing about, hurried respiration, Sleep. and waking in a fright, probably caused by dreams, indicates feverishness; while sudden startings and grinding of the teeth will occur if the nervous susceptibilities are being worked upon. Heavy sleep is sometimes a normal sleep, and should be left undisturbed; unless, indeed, any popular "soothing" medicine has been administered, when the condition is not to be ignored (see Opiates).

The *bowels* of an infant should be moved two, Bowels. three, or four times a day. During the first couple of days of life the evacuations are of a black colour; but henceforth they should be of a bright yellow, and thin in consistency, till the time when other food than milk is given, when they should become darker and firmer. A green colour of the motions indicates irritation of the bowels; which, if neglected, will pass into diarrhoea. Mucus or slime with the stool indicates greater irritation, and when there are streaks of blood intermingled with the slime, we may be sure we have an actual inflammation to deal with. Sudden and copious watery purging indicates the absorption of malaria or a chill as a cause, and congestion as a result—a symptom which calls for active measures. White constipated motions point to acidity, by which the milk has become too densely curdled within the intestine, and the condition is one which calls for a change of diet. Soft putty-like white evacuations indicate liver derangement, with non-passage of bile. Great or unnatural fetor of the motions argues indigestion, the digesting fluids not acting properly upon the contents of the intestine, but permitting decom-

position before its proper time. Bloody motions accompanying fever are always indicative of an anxious state.

## Abdomen.

Puffiness and tenderness of *the abdomen* show that gas is being formed by decomposition within the intestines, and that there is a state of great irritation, bordering on inflammation; while a flaccid, retracted belly shows emptiness of the intestines and the absence of inflammation. Marked pain on pressure just above the right groin shows that irritation is passing upwards; and when there is, with it, chronic diarrhoea or dysentery, it is an anxious sign. If the "abdominal breathing" be increased, that is, if the child seems to breathe chiefly or almost wholly with its belly, attention should be at once directed to the chest, which the muscles of the belly are probably endeavouring to relieve. If the belly be wholly motionless, and the chest acting with unusual vigour, very probably there is some inflammatory complication of the abdomen. An unnaturally enlarged belly may be simply due to flatulency; sometimes it is occasioned by enlargement of the spleen; but it always indicates something wrong, even though it be merely the result of bad feeding. It should not, however, be forgotten that the abdomen of a young child is naturally prominent.

## Urine.

The *urine* of an infant when fever is impending is often copious and clear, but when it is actually feverish the urine is passed with unusual frequency, and it stains the napkins of a reddish colour. When there are worms the urine is often quite milky in appearance.

## Vomiting.

VOMITING in an infant at the breast may be simply a mechanical act, indicating that too much food has

been taken. Improper food may occasion a sudden attack of vomiting with diarrhoea (p. 88); so may an approaching attack of ague, but then the symptom soon subsides. *Persistent* vomiting is always a symptom of importance. "In children especially, the existence of obstinate vomiting is indicative of head rather than of stomach disease" (Reynolds). The preliminary nausea, the foul tongue, abdominal griping, and obstinate retching being signs of gastric vomiting, and the contrary holding good of head vomiting, serve to distinguish the one kind from the other. Besides these signs, if it be the stomach that is irritated, there is pretty sure to be diarrhoea; but if the head be the cause, there is usually constipation. Vomiting, therefore, is usually either a very trivial or a very important symptom.

From the *pulse* of a young infant, the amateur is Pulse. not likely to obtain much information. Even the physician seldom troubles to count it except during sleep, because the slightest excitement has a great effect upon its frequency; but the *nature* of the pulse is an important guide to those who have experience. I will not here attempt to describe a series of nice distinctions, because such cannot be taught by words; but it is not difficult to judge whether the beat is comparatively stronger or weaker than it was on the day before. It may be mentioned, lest the parent should be startled at its frequency, that the infant's pulse beats about 120 times per minute, while even at two or three years of age it will be 100 or more, when the health is perfect. One thing may be said—that a very slow pulse is unnatural to childhood.

The *respirations* bear a definite proportion to the *Respirations*.

pulse, for the rate at which the blood is driven through the lungs of course regulates the quantity of air which is essential to yield it a sufficiency of oxygen—a certain quantity of blood requiring a certain quantity of air. The pulse beats about three times for each respiration, of which there are 40 per minute in the sucking infant, but there are not so many (by some 8 or 10) during sleep. A marked change in the ratio is of importance ; for instance, if there were only 2 beats to each respiration of a sick child, we should suspect a coming pneumonia. The breathing should be smooth and regular. By carefully listening to it while a child is asleep, much information may often be gained. If it be possible to apply the ear to the naked chest, the full, deep, clear sounds of inspiration and expiration should be very plainly heard both before and behind, from the collar-bone and top of shoulder-blades to the lower edge of the ribs. Sometimes fat, full-blooded children breathe heavily, or with a sort of grunting sound, which can hardly be mistaken for diseased action, but it is as well to bear the fact in mind.

Indicative of lung mischief.

When the breath is drawn in with some difficulty and with a shrill sound, there is evidently narrowing of the entrance ; and if, at the same time, there is a peculiar broken bell-like sound in the cough, probably there is some form of inflammation of the throat. When the lung is inflamed there is quick inspiration, the lips are kept apart, and the child is very restless, thirsty, and feverish. In bronchitis the respiration is more or less difficult, sometimes not greatly so, and there is a great deal of "wheezing," which will be heard as a crackling or gurgling sound when the ear

is applied to the chest. The breathing may be simply quick from fever; but if rapid and accompanied by movement of the nostrils, there is usually bronchitis or inflammation of the lungs.

Unequal movement of the two sides of the chest—<sup>Collapse of lung.</sup> that is, if one side remains motionless while the other expands fully—generally indicates something seriously wrong.

By placing the open hand gently but firmly against Palpation. the side of the chest, a rattling may often be *felt*, in cases of bronchitis. But if after a good cough, a rattling which previously existed, disappears, the cause was only a temporary accumulation of mucus. If, however, it remains after coughing, and continues equally marked as before, it is a sign that a good deal of mischief exists.

In health the *tongue* is clean and the *breath* sweet. Tongue. A whitish tongue indicates derangement of some sort, such as approaching fevers, indigestion, &c. A dark brown condition of the tongue is present in inflammations and severe fevers; when, in addition to this latter condition, there is dryness of the organ, we may be pretty sure there is serious illness. A very red, flesh-coloured, raw-looking tongue indicates gastric or intestinal irritation. The tongue is itself liable to inflammation without any other diseased condition being present, but its swollen state, ruddiness, and the absence of other symptoms will serve for recognition.

Foul breath may have its origin in a simple dis- Breath. ordered stomach or fever. Sometimes, with comparative health, the breath remains foul; but there must be something more or less wrong while anything offensive can be detected.

Within the *mouth*, on the sides of the *cheeks* or *Mouth*.

lips, the irregular little white patches called "thrush" may occur. An inflamed patch, with an ash-coloured centre on the inside of the cheek, occurring in exceedingly debilitated children, or during a long and prostrating illness, is an alarming sign, for which medical aid should be sought without delay (see Mouth, inflammation of).

Skin.

The *skin* in the hot weather should always feel moist and cool. A hot dry skin, after exposure to great heat, should always be regarded as illness, and should be treated as such without delay (see Sunstroke). A dull, clay-coloured skin often accompanies the sudden accession of illnesses, such as acute diarrhoeas and agues. A wax-like skin, with transparency of the ears, tells of bloodlessness; and a yellow skin, of jaundice. A flush over the cheekbones on a pallid background, bespeaks hectic or wasting fever.

Bodily temperature.

The *temperature* of the body is a matter of great moment for assisting in the recognition of illness. Particularly is this so in the hands of the unskilled in disease, for here we have a matter of fact, free from all the errors into which mere opinion, judgment, and anxiety are apt to lead, by which we can determine the import of other symptoms; and, after a few observations, ascertain whether the case is one of mere indisposition, or whether the patient is suffering from actual disease, long before we could ordinarily guess without such assistance. No estimate of the heat of the body can be made by the hand; indeed, the most erroneous impressions may easily be conveyed to it. In the thermometer alone have we the means of ascertaining the temperature with accuracy.

As judged by hand, fallacious.

Thermometer necessary.

The ordinary thermometer is useless for the purpose.

A clinical thermometer such as is here represented should be in the possession of every one who has the care of children. The instrument is made wholly of glass, upon which the graduations are cut. Between each set of figures there are five degrees (written  $5^{\circ}$ ), each of the longer lines representing  $1^{\circ}$ , and between each of these latter are five spaces, which therefore show fifths of a degree. It will be observed that the thermometer is narrowed towards its lower end, and that the minute central tube at this point becomes so fine as to be barely discernible. The object of this is to prevent the portion of mercury (A) which is detached in the tube, from descending into the bulb (B); an accident which would spoil the instrument as a self-registering thermometer. In the diagram the detached portion is observed to register  $96\frac{2}{5}^{\circ}$ .



Great danger 107  
High fever. 105  
Fever 102.  
Feverish 101.  
Indisposition 100  
Natural tempera-  
ture 99.  
Depression 97.  
Collapse 95.

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Kind of thermometer.

Description of instrument.

A

B

seen to ascend the tube rapidly till it apparently strikes against the detached portion, which will ascend too, till the highest temperature of the part in contact with the bulb is marked. Now, if the

If the bulb be grasped in the hand, the mercury will be

it.

it.

hand be removed from the bulb, the lower part of the column of mercury will rapidly descend towards the bulb ; but the detached portion will remain stationary, marking the highest temperature which has been attained ; hence the instrument is called "self-registering," and the detached portion is called the "index." These instruments are now made so that the glass over the column of mercury magnifies it. In ordering one, ask for a self-registering clinical thermometer with a magnifying index.

## To set it.

To set the thermometer for use again, it is merely necessary to grasp it by the upper end, between the forefinger and thumb, and swing the arm sharply around ; by which motion the detached portion is jerked somewhere below the figure 95.

## To use it.

To use the thermometer ; the patient should have been in bed for at least half an hour. One arm should be removed from the sleeve of the night-dress, and all clothes kept away from the arm-pit. This should be done quickly and without exposure of the surface to the draught of a punkah or other cold. It is

## Caution as to placing it.

very necessary that this precaution should be taken, lest the registration of a temperature below that of health should cause the parent to imagine that something terribly wrong had occurred ; or the thermometer might, under such circumstances, record health when fever is actually present ; or at least a lower temperature than it would indicate if fairly treated. The bulb of the thermometer is now to be placed deep in middle of the arm-pit, and the arm itself drawn firmly across the front of the patient's chest. This position, with the thermometer firmly fixed, should be maintained for at least ten minutes. The thermometer

may then be removed and taken to a good light, CHAP. XV. where it may be read. In doing this the observer Caution as to reading. should be careful not to allow the bulb to come into contact with his own hand, nor should he read off the temperature in the direct rays of the sun. In older children it is more convenient to place the bulb in the mouth under the tongue, the lips being kept firmly closed the while. Three or four minutes will then suffice for an observation. In very young infants, the easiest and most reliable plan is to pass the bulb into the rectum.

A clinical thermometer is a delicate instrument, and should never be employed to ascertain the temperature of a bath or do any such like work, which will be sure to spoil it.

Now as to the general information we can derive Information given by the thermometer. from the thermometer :—

(1) In the first place, the temperature of a child's body when in health is about 99 degrees; one or two sub-divisions more or less will not signify.

(2) Again, the temperature in health always reads a little lower in the mornings than in the evenings.

(3) A rise above 100 degrees is a sure sign of some kind of indisposition, which is deserving attention; and if the rise is persistent (*i.e.*, if it continue beyond 12 or 24 hours), we may be certain that an illness is coming on.

(4) If the temperature rise steadily at each observation (as compared with the figure obtained at the same hour on the previous day), we may be quite certain that the illness is gaining ground; similarly, a daily decline indicates approaching convalescence. If it goes on increasing daily, till at the end of a week

CHAP. XV. it has attained  $104^{\circ}$  or more, there is cause for anxiety. Still increasing, there is danger.

(5) A temperature much lower ( $97^{\circ}$ ) than the natural heat is seldom found, unless towards the end of some exhausting illness; and it indicates the necessity for artificial warmth, stimulation, and food.

(6) A very suddenly high temperature occurring in a child, indicates either an attack of ague, or that there has been exposure to the sun. Unless precautions are taken, convulsions are then imminent. A *sudden* rise from the healthy standard is not of the same seriousness as a gradual increase up to a similar point, except in so far as the liability to convulsions is concerned.

(7) After an illness, though a child may apparently have recovered, he has really not done so until the temperature has become not only natural, but has remained so for several days.

(8) When the evening temperature, *during illness*, becomes lower than that of the morning, it is a favourable sign.

## PART III.

### The Child in Sickness.

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#### *DIVISION I.—ON FEVERS.*

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#### CHAPTER XVI.

##### ON FEVER GENERALLY.

ITS NATURE, TREATMENT, AND CLASSIFICATION.

THE term “fever” is a perfectly well understood one, CHAP. XVI. implying a series of symptoms—heat of skin, thirst, General definition. a quick pulse, a flushed face, and scanty urine.

But a state of fever may arise as a mere symptom May be of local origin. of a local ailment, such as the existence of a boil, the ingestion of improper food, &c. In these cases the febrile state is only a constitutional manifestation of a local complaint, and as such does not now engage our attention. At present we are discussing general fever as a disease in itself.

Almost all fevers commence in the same manner, Commencement of all fevers the same. without at first any well-marked distinguishing characters. It would only be attempting an impracticable refinement to endeavour to indicate, point-blank, early differences which would serve for the recognition of each kind. It is quite true that there are in India some fevers which are capable of almost immediate detection by the aid of the thermometer and their peculiar symptoms; and of such we shall

speak presently. But in the majority of instances we only see before us a patient suffering from a state of fever, whose course we must carefully observe for a couple of days or so, before we find ourselves in a position to pronounce definitely as to its nature. This being so, it becomes very essential that we should have some clearly-defined principles of action upon which to proceed to meet the emergency, with the best chances of leading it to a favourable issue, whatever its exact nature may ultimately prove to be.

Nature and effects of fever.

Before we can act intelligently or usefully, we must have some sort of a correct idea of what we are dealing with, how it affects the system, what are the dangers arising out of it, and how these may be best obviated.

What is fever? Fever is an unnatural but veritable burning up of the body, the constituents of which are, through too

A process of combustion.

rapid combustion, wasting away at an undue rate, while at the same time the assimilation of nutriment is so very slight as to be far from compensating for the loss thus endured. Thus results prostration, and an immense quantity of worn-out material is thrown upon the liver, spleen, and other organs, which their diminished powers are not able to dispose of, and their functions therefore become impaired. Whence arises further deterioration of the blood, of which all these organs are perfecters and purifiers. From mal-nutrition the brain and spinal cord become disturbed ; they no longer are able to exercise complete control over the whole body. When the galvanic battery is out of order, the telegraph wires are of very little use. Hence the frequency of convulsions and other nervous affections during the fevers of children,

Nutrition becomes affected.

Hence nervous disturbance and muscular waste.

whose nervous sensibility is so much proportionately in excess of that of the adult. Without entering into the theory (which is here unnecessary) of the febrile state, such, in general terms, are the great and salient points to be kept in remembrance by those upon whom the treatment of a fever case devolves; and I would beg particular attention to the above description. Whatever be the cause of fever, whatever be the nature of the poison which initiated it, or whether there be a poison or not, the above statement of the case holds equally good; and this is fortunate, for it gives us distinct indications as to the dangers incurred and the measures we should adopt to meet the emergency and guide it to a proper termination.

The objects of *treatment*, then, should be as *Treatment*. follows:—

1. *To reduce the excessive heat of the body.*—1. Reduce heat. Dangers of excessive heat two-fold.

From such heat there are two dangers: firstly, that which I may call the immediate danger, the effect of heat as heat, by which the temperature of the brain and spinal cord may be so raised that they will no longer act naturally, the result being convulsions or complete paralysis (that is, death). Then there is the secondary or remote danger of enormous waste, which may proceed past the powers of bodily endurance.

It is perfectly apparent that if we can but reduce the fire, the stove will not become red-hot, and less fuel will be consumed. So if we can lessen the bodily heat, we remove or lessen both these perils, the first of which is to be apprehended when the temperature suddenly rises to 104° or over it, or when there are twitchings of the muscles and the other "warnings" enumerated elsewhere under the head of

CHAP. XVI. "Convulsions;" and the second is always present during the course of prolonged fevers.

**The cold bath.** When we have indications of the advent of the serious effects of direct heat, the most prompt attention and energetic measures are demanded. By far the most efficient means for counteracting this danger is the use of *the cold bath*, which should be fearlessly resorted to in such cases.

When to be used.

Whenever the temperature rises suddenly to 104°, or whenever nervous symptoms threaten during the course of a fever, it is an imperative duty to resort to the cold bath, which should be administered as follows:—In all cases of pressing emergency, the water should be as cold as it is possible to procure it, the bath should be deep, the child should be immersed in the water up to its neck, and there detained for a period of from 15 minutes to half an hour. Should the emergency not be so great, and the child be extremely easily frightened, the temperature of the water may be raised to a heat five degrees less than that of the child's body, as measured by the thermometer, a blanket or sheet being spread over the bath, so that the water be invisible to the little patient, who is then to be gently lowered into the bath upon the sheet. But the surface of the water should always remain uncovered to hasten cooling, and with the same object the water may be agitated, provided this do not frighten the child.

Effects of the cold bath.

The effects of the bath so administered are, I may say, invariable. After a few minutes the child's face will brighten up, the nervous twitchings subside, very constantly a motion is voided in the water, and after a short time the child, who before was but

semi-conscious, will play with pieces of wood or other toys which have been thrown upon the surface of the water. Whilst seated in the bath, food may be administered, and that which before was persistently and petulantly refused will now be freely partaken of.

To obtain real benefit of some duration, it will be necessary to keep the patient in the bath for at least a quarter of an hour. As to how much further it may be prolonged, it is well, in most cases, to abstract heat till shivering commence. With the occurrence of this sign, the child should at once be removed from the water, placed lying upon a sheet spread to receive it, and gently dried without rubbing; perfect drying is neither necessary nor desirable. Then, covered by a single sheet, it is to be laid upon the bed, when it will in nineteen cases out of twenty fall into a quiet slumber, such as has been unknown to it since it became ill.

After a few hours—perhaps 4, 6, 8, or 10—the heat may possibly again rise to a threatening point. What is to be done? Repeat the bath without a moment's hesitation in precisely the same manner as before. A repetition, even several times within the twenty-four hours, is quite admissible and often very necessary.

I have entered thus fully into these details, because I know from experience that I am treading upon prejudiced ground in urging this advice. Popular objections to the proceeding seem to be—firstly, because of its comparative novelty; secondly, because of its apparent cruelty; and thirdly, because native opinion (and the ayah has a powerful voice, which she does not, in her ignorance, scruple to use on the distracted parent), is so vehement against either cold water or fresh air in cases of this sort. As to the first objection, it is no novelty, but a well-es-

Duration of  
the bath.

Treatment on  
removal.

Further  
treatment.

against the  
bath.

—  
Established medical agent ; as to the second, let the effects answer for themselves. The cruelty really lies in denying the means of relief ; and as to the third, it is simply to be ignored. In practice I have found it almost useless to give directions. I almost invariably have had to do the thing myself in the first instance. When mere directions were trusted to, it was found that some excuse for non-performance was urged, or a mere pretence was gone through with the object of justifying a prevarication to the conscience and to the doctor.

## Antipyrin.

I have allowed the foregoing pages to stand as in the former edition, with little alteration ; but since it was printed a very valuable and safe medicine, called *antipyrin*, has been discovered, and in it we have an efficient and safe means of reducing fever heat. Having employed the drug extensively in India and England, the certainty of its result has caused surprise. The dose for a child of five years is ten grains dissolved in a little water, and this should be repeated in an hour, a third dose being given after a similar interval if required. The medicine is to be repeated in the same way, should the temperature again rise to such a height as to cause uneasiness ; half the above quantity may be given to an infant, but less is not likely to be useful. On the other hand, the dose may be increased if found desirable. Antipyrin is almost tasteless, it causes no depression and very rarely vomiting.

## The bath and antipyrin combined.

In the bath and antipyrin we have formidable weapons for encountering the heat of fever. In a case of great emergency it would be unwise not to employ both at the same time, and after the desired result has been attained, the lowered temperature may be perpetuated by the drug alone, or otherwise.

## Sponging the surface.

*Sponging* the surface of the body with water or vinegar and water (one part to three) is another means

of reducing the temperature, but it is not sufficiently powerful to meet a sudden emergency. In the treatment of prolonged fevers it is, however, of value as a means of soothing the system and keeping waste in check. Sponging may often with advantage be employed to keep in check the rising temperature which is so often observed a few hours after the bath has been used. The objections to sponging in the case of young children are, that it is annoying, and prevents that perfect repose which is so desirable. As compared with the bath, it abstracts heat in a very minor degree, wherefore it should never be regarded as a substitute.

*Drinking freely of cold water, and sucking ice* Cold drinks.  
when procurable, are accessory means which should never be neglected.

The local application of *cold to the head* is a measure of some value, and one which may be used in conjunction with others. It undoubtedly has a great effect, when properly used, in allaying nervous excitability and relieving head symptoms; but as a cooler of the body generally, it must not be expected to accomplish much. The thickly-folded wet cloth which is so commonly applied, is really a source of additional heat, for it soon becomes warm, and then acts like a poultice. A single piece of wetted muslin which will permit of free evaporation, should be used, and an evaporating lotion employed (Nos. 13, 35); or, better still, an india-rubber ice-cap or bag (obtainable from the chemist) filled with broken ice.

There are certain medicines which have a cooling effect, and which may be used as adjuncts as symptoms dictate (No. 60, *et seq.*).

Oil frictions. Another valuable but comparatively minor means of cooling the body is by using oil frictions. It is a proceeding, the value of which the natives well know. Frequently, after a child has been removed from the bath, or after the interval of sleep which follows the bath, a gentle rubbing of the whole body with warmed oil will be attended with the happiest result; or when the temperature is only moderately high—from  $100^{\circ}$  to  $102^{\circ}$ —the proceeding will be found to give great relief. The skin will become soft, the irritability of the patient will subside, and there will be a tendency to perspiration, sleep frequently ensuing. If the patient has not had a bath, the potency of this remedy will be enhanced by a previous sponging of the surface.

Regulation of  
the bed-clothing.

While the body of a fever patient is dry and burning hot, it is a mistake to heap on bed-clothing in the hope of inducing perspiration. From what has been already said it will be understood that to do so is only to court all the dangers of excessive heat. The accession of perspiration will not be hastened. When perspiration commences naturally about the roots of the hair, on the forehead, and at the bends of the joints, some additional clothing may be drawn over the patient; to be further increased in proportion to the increase of perspiration.

2. Rest.

2. The second point of great importance in the management of a fever is *rest*, and in the case of children it is doubly essential. We have seen that fever is a great destroyer of the body substance, and we know that exercise is also a destroyer, wherefore it is plain that without rest the patient is not having a fair chance. By rest is meant the most perfect

tranquillity of both body and mind. Every movement represents a certain expenditure, and so does every thought. Without tranquillity, a fever may be unduly prolonged ; or convulsions, with all their attendant dangers, induced ; or serious exhaustion may be brought on at a critical period. Rest represents nourishment indirectly, in that through its instrumentality a certain quantity of body substance which would otherwise be expended is conserved for future use.

To attain tranquillity with greater certainty, it is often advisable to employ certain medicines, notably chloral, the bromide of potassium (*see* Sedatives), and opium (*see* Opiates).

3. The thorough *ventilation* of the apartment 3. Ventilation. occupied is especially necessary, because (*a*) it keeps the body cooler; because (*b*) the disordered blood being less capable of absorbing oxygen from the air, the freest and purest supply is necessary; because (*c*) the chances of infection are thus lessened; and because (*d*) a limited ventilation is proved to increase fever mortality.

4. *To restore exhausted nature.* To endeavour to 4. To meet the supply, to an extent compatible with vitality, the exhaustion. deficiency caused by the excessive bodily waste, is a point second to none in the management and treatment of a prolonged fever. To do this we must chiefly rely upon the judicious administration of food. Immense importance of Nothing can be of greater consequence than that feeding. every possible particle of strength be retained by the patient. Under no circumstances would I advise the parent to risk a low diet. Let the food be as simple as you like, but, except under explicit medical guid-

ance, never in any case of fever pursue a lowering plan. You know not for how long a time the child may have to battle for life. You know not but that a single day's carelessness or mistaken action on your part may withdraw that small amount of reserved strength which, subsequently being found wanting, may turn the scale unfavourably.

Medicines may materially assist our efforts, but they can never, even in ever so small a degree, supplant food and good nursing.

5. Purify the blood.

5. We endeavour to ensure the speedy *removal of all improper materials from the blood*—whether they be the products of the undue waste or of the nature of a fever poison—by the administration of medicines which will preserve or establish the action of the skin, the bowels, the kidneys, the liver, &c., as perfectly as possible. Hence we use moderate aperients, fever mixtures, diureties, &c.

Purgatives.

I would here insert this caution—never employ very strong purgatives during a fever without a very good reason for doing so. Never lightly resort to them; the fever poison may co-operate with the medicine and establish a too violent or even a dangerous flux.

6. Stimulants.

6. *Stimulants* are often necessary in the treatment of prolonged fevers; but there are two kinds of stimulants, of vastly different natures, the one from the other. There is the medicinal stimulant and the Medicinal and aleoholic stimulant. The former (as examples, take aleoholic. eamphor, ether, and ammonia) are simple pure stimulants in the ordinary sense of the term, and are often admissible comparatively early in a fever when there are signs of depression. They are comparatively

harmless. The alcoholic stimulants (wine and brandy) are, as a rule, only useful after the fever has passed away and the body is left exhausted ; or towards the end of a prolonged fever, when we observe "typhoid symptoms"—viz., a dry, dark brown tongue, great prostration, trembling of the hands, and perhaps diarrhoea. Under such circumstances, the use of alcohol is not only justifiable, but it is usually essential. How far it is to be continued must depend upon the effects which it produces within half an hour or an hour after administration. A firmer pulse, ability to take more food, the relief of headache, a tendency to sleep, fall of temperature, clearer intellect, and greater tranquillity of the nervous system, are signs which indicate that it is producing benefit and ought to be continued.

When to use alcohol.

7. We endeavour to *relieve distressing symptoms*, 7. Relief of distressing symptoms. such as (a) headache by the application of cold, in the form of a lotion or the douche ; or hot fomentations succeeded by the sudden application of cold—a method which often succeeds. Sometimes headache calls for an ammonia draught, sometimes for more potent medicines. (b) Vomiting is relieved by sucking ice, by adding lime water to the food, by changes of food, by poulticing the stomach with mustard and flour, and by the use of some medicines (62, 7). (c) Diarrhoea is a symptom which should always be seriously regarded ; in fact, it should never be allowed to continue during a fever. For its treatment the reader is referred to another page. (d) Delirium at the beginning of a fever is usually an indication of excessive heat, but at the end of a prolonged fever it signifies want of nourishment, and perhaps even of

## CHAP. XVI.

alcoholic stimulation. (c) Sleeplessness is a symptom encountered by the administration of the warm bath, by oil frictions, and by chloral and bromide of potassium (8, 9) as medicine.

## 8. Special poison.

8. When the nature of a fever has been recognised, we endeavour to *neutralise its special poison* and to meet its peculiarities by the various means which will be described further on.

## What to do.

When a case of fever arises, *the first thing to be done* is to act upon the principles above laid down; and the next is to observe carefully the course pursued by the fever as indicated by the thermometer (p. 157) and the general symptoms. By these means we discover the nature of the fever,—whether it be—

Classification.  
Continued.

1. Continued—that is, whether it pursues a continuously even course, without interruption or marked daily abatement. Of this kind are—Simple continued fever; ardent fever; and typhoid fever.

1. Interrupted. 2. Remitting or intermitting—that is, the symptoms ceasing or almost ceasing for an interval daily. Of this kind are the malarial fevers, which are termed remittent and intermittent.

2. Intermission and remission. By the expression “remission” is meant a marked daily diminution of the fever, which, however, is never wholly absent. By “intermission” is meant a complete abatement of the heat between the attacks.

3. Eruptive; of which the child is liable to the following in India:—Measles; scarlatina; small-pox; chicken-pox, and dengue.

Each of the above affections is treated of under its proper heading (*see Index*).

## CHAPTER XVII.

### I. THE CONTINUED FEVERS.

#### (1) SIMPLE CONTINUED FEVER.

THIS is an affection which runs a short course of from CHAP. XVII. twenty-four hours to two or three days, seldom longer. Definition. There is no intermission or remission from beginning to end. Its name implies its nature—it is both simple and continued.

Causes.—Improper food, exposure to the sun, chills Causes. during vicissitudes of weather, and the irritation of teething when stimulated by one of the other causes.

A state of nervous derangement is initiated without Nature. the accession of any poison. When the exciting cause is removed, and the system, aided by remedies, has had time to recover from the shock, the fever abates and vanishes. This form of fever is very common in England among teething children. It is in no way infectious.

There is usually preceding lassitude, and possibly Symptoms. some chilliness, with headache and pains in the limbs. There is thirst, and the urine is almost always high-coloured. Soon afterwards, usually the same day, the fever comes on, and the heat may be detected by the hand, though the thermometer will have shown it earlier than this. The temperature rises quickly to

CHAP. XVII. 102°, 103°, or even to 104°, but, with the exception of the possibility of convulsions, this forebodes no special danger (p. 160 [6]). The high temperature seldom lasts for more than a single day. It then gradually subsides, and the natural heat is resumed on the second or third day. With the subsidence of the fever there is a feeble perspiration. Not infrequently, when the fever has disappeared, an eruption may be observed on some part of the body, but this is of no importance, further than as a notification that

**Peculiarities.** the indisposition has come to an end. The peculiarities of this kind of fever are—the suddenness with which the temperature rises, the brief duration of the high fever, the regularity with which it subsides, and the shortness of the whole illness, if properly managed.

**Frequency.** It is very common about the time of teething, but may occur at all periods of childhood. Seldom fatal unless mismanaged.

**Distinguished.** Distinguished from chicken-pox by the absence of the eruption; from measles, by the absence of cold in the head and cough; from scarlatina, by the absence of sore throat; from small-pox, by the absence of severe vomiting and pains, and of the eruption. The temperature rises more suddenly than in typhoid fever. From the commencement of remittent fever, it is not easily distinguished, though twenty-four or thirty-six hours' observation will usually suffice to mark the difference.

**Treatment.** Treatment.—The child should be put to bed in a cool and slightly darkened room, and covered only with a light shawl, unless it complains of chilliness, when a blanket may be used till the sensation has

passed away, but it should not be employed longer (p. 168). If a full meal has been recently partaken of, an emetic of ipecacuanha, 3 to 5 grains with a sufficiency of sweetened water, should be given. The state of the bowels should then be attended to—a dose of castor oil (48), or Gregory's powder (50), or of senna (52) will usually be sufficient, unless there be actual constipation, when a stronger medicine (53, 56) may be used with advantage; but excessive purgation should be avoided (p. 170): cooling drinks (60, 62, 63) may with advantage be freely allowed. As the distress increases antipyrin (p. 166), sponging the surface with lukewarm water, or vinegar and water (1 part to 4), should be employed, and resort had to the cold bath (p. 164) should necessity arise. The diet should be exceedingly simple, consisting of thin arrowroot or diluted milk, for the first day. Afterwards chicken broth should be added to this, and other simple articles of nutriment given as opportunity offers. A starvation system should never be risked. An hour having elapsed from the time the purgative was administered, a fever mixture (36, 38) should be commenced, and given every second hour. Under this treatment the fever will usually begin to subside in from twelve to twenty-four hours. The Signs of first sign of abatement will be the appearance of a amendment. little moisture about the roots of the hair. At this moment, or an hour later, it is a good plan to administer a dose of quinine ( $2\frac{1}{2}$  grains to a child a year old, and 5 grains if two years old), for two reasons,—because it possesses the power of reducing febrile heat generally, and because the fever may be of a malarial type, and may therefore at this stage be cut short by

CHAP. XVII.

Use of quinine.

quinine. While there is delirium, or a tendency to convulsions, great depression or torpor, quinine had better be withheld for the time, till the symptoms subside. With the appearance of perspiration the bed covering should be increased in quantity, the additions being made as the bodily heat decreases, and the perspiration increases. If the child be old enough, a draught of warm tea (not strong) may be allowed during the progress of the perspiration.

Management of restlessness.

A cold lotion (13) may be applied to the child's head throughout, provided it do not cause annoyance. Should it happen that a restless, wakeful night is to be apprehended, a tepid bath at bedtime, followed by an oil inunction (p. 168), will be found to exercise a very soothing influence.

## CHAPTER XVIII.

### THE CONTINUED FEVERS.

#### (2) ARDENT FEVER.

ARDENT fever is a name which in England has been used synonymously with that of the simple continued fever just described. It may be that the latter is but a minor degree of the former, but it is a condition so serious and so frequent in India, that for practical purposes it is deserving of separation and special consideration. Convulsions, heat-apoplexy, or some form of paralysis may result from it, if it be not properly managed.

CHAP. XVIII.

What is meant  
by the expres-  
sion.

When, at the hot season of the year, a child is attacked with a sudden and violent fever, the temperature running up to  $105^{\circ}$ ,  $106^{\circ}$ ,  $107^{\circ}$ , or even higher, such a fever is an ardent fever, for the time being at all events. It may be that it will subside in due course as a simple fever does, or it may even be that it will eventually prove to be a violent intermittent or remittent fever; \* but it cannot be a typhoid attack, nor yet one of the eruptive class. Let it be what it

\* At the risk of being charged with elevating a symptom into a disease, as I admit to be here done, the definition is adhered to as being eminently practical for non-professional persons.

CHAP. XVIII. may, the great practical point is that we have to deal with an ardent fever for the time being: and if with the above suddenness and temperature we do not find twitchings of the muscles, lethargy, or excessive irritability, with or without dilated pupils, and possibly a tendency to delirium, the case will be an exception to the rule which holds good of children under such circumstances.

In such a case it should be clearly understood that the child's life is in danger while the high temperature lasts, or until it be accompanied by profuse perspiration, which, however much it may appertain to the nature of the disease, will require some time for its appearance.

**Delay is dangerous.** A judicious parent will not wait for the appearance of symptoms, nor will he wait for what are called "warnings." Let the sudden accession of such an amount of heat suffice for all warnings.

**Treatment.** For the very serious state of matters we are now considering there is only one efficient remedy, namely, cold water. I need not here repeat that which has been fully explained at page 164, as to the mode of employing this powerful and certain remedy. No drug is to be compared with it for rapidity and certainty combined; indeed, in the case of a violent ardent fever there is not time allowed for the action of drugs, so emergent are all the surroundings of the case.

The cold bath having been *efficiently* administered, the next thing to be done is to give a full dose of antipyrin (p. 166) at once; or, in its absence, quinine ( $2\frac{1}{2}$  grains to a child of a year, and five grains to a child of two) during the first interval of cessation which

results, or immediately after the sleep which succeeds the bath. Especially is it necessary to do this when exposure to the sun has been the active cause of the derangement, but it is better to avoid quinine while there is torpor or a tendency to convulsions.

A genuine case of sun-fever so treated, before actual injury has been sustained by the brain, will seldom be a cause of anxiety beyond a few hours. But should the treatment have been too long delayed, although probably death may be averted, yet the risk of paralysis from brain or spinal injury through heat is incurred.

During the progress of recovery the points demanding scrupulous attention are—*(a)* the most absolute tranquillity; *(b)* the free opening of the bowels by means of an enema in the first instance (44, 45); and then the administration of a strong purgative (53, 56); *(c)* surrounding the patient with a cool atmosphere, which should be kept in active motion with the punkah; *(d)* the most simple diet; and *(e)* if there is sleeplessness and unusual crossness, after recovery from immediate danger, the administration of a dose of chloral (8), and afterwards for a few days bromide of potassium (9).

Favourable results of treatment.

After management.

## CHAPTER XIX.

### THE CONTINUED FEVERS.

#### (3) TYPHOID OR ENTERIC FEVER.

CHAP. XIX. THE typhoid fever of children is the same thing as  
Other names. the infantile remittent fever of England. It is also  
termed gastric or enteric fever.

Definition. It is a continued fever, of about three weeks' duration, accompanied by a peculiar scanty eruption, which occurs in crops from the eighth to the twelfth days of the fever, and by great prostration and more or less diarrhoea. The force of the fever poison expends itself upon the small intestines, which in severe cases undergo ulceration. The disease having once occurred, conveys protection from a second attack.

Causes and prevention. The causes and prevention of this affection have been discussed at p. 140. Let it be remembered that typhoid fever is a *preventible* affection.

Frequency. According to statistics the disease is rare among European children in India—indeed, it is rare amongst the native races. Even in England it is extremely rare before two years of age, and unusual before five. About six per cent. of typhoid patients are under ten years of age (Murchison).

Symptoms. Before the actual symptoms commence, a period varying from one to two weeks elapses after the imbibition of the poison.

The disease may run either a mild or a severe course, and "the differences are so great between its milder and severer form as to warrant our adopting them as a ground for its subdivision into two classes" (West). A case of the *milder variety* of milder form. will run such a course as the following:—The child becomes listless and disinclined to play. He is drowsy, desires to lie down, and his nights are restless. The skin may now feel dry, but hardly hot, yet the thermometer will show a temperature of 100° or so. On the second day the dryness and heat increase. The thermometer will register a steady daily rise. The urine now becomes high-coloured and scanty, the breath is apt to become offensive, and the back part of the tongue is observed to be thickly furred, while its end is unusually red and bright. Nearly always the bowels are too loose, the motions being of a light yellow ochre colour, and smelling very offensively. The respirations are rapid, and there is frequently a short hacking cough. The temperature rises steadily till the maximum is attained usually about the fifth or sixth day, when about 104°, degrees will be reached. There is a constant gurgling of the bowels; particularly is this noticeable after food has been taken; and not unfrequently there is some pain on pressure over the lower part of the abdomen near the groins, and also sometimes over the spleen. Sometimes, and at irregular intervals, a perspiration may appear on the surface, but it soon passes off and brings no relief. Unless the case is very mild, the tongue, before white, now becomes brown, and the looseness of the bowels increases. The muscular wasting is considerable.

## CHAP. XIX.

## Commencement of recovery.

## Termination of the illness.

All the symptoms continue with more or less force till the end of the second week, when the morning temperature (which is usually in sickness, as it always is in health, a little below that of the evening) will be found to have fallen as much perhaps as a couple of degrees. A rather sudden evening rise may be expected, but it will not attain the height of the previous evening.

Thus is initiated the commencement of convalescence, and at the same time the general symptoms begin to abate. But the disease still continues till the end of the third week, by which time convalescence will in most cases have been fairly established. Great prostration and emaciation are left.

**The eruption.** In defining the disease, an "eruption" has been mentioned; but no stress has been laid upon it as a sign, because, although when it does occur it is absolutely distinctive of the fever, it is often very difficult to discover it, and it is frequently altogether absent in children. It consists of a "few small, very slightly elevated rose-coloured spots, disappearing on pressure, each spot continuing visible for three or four days only" (Aitken). Generally they occur in crops, which appear and gradually disappear, to be replaced by others, and are to be looked for about the abdomen, chest and back, between the eighth and twelfth days of the fever.

## The severer form.

The *severer variety* of typhoid fever sets in with greater violence. There is drowsiness, vomiting, and sometimes a short shivering fit. The temperature may go up to  $105^{\circ}$  or  $106^{\circ}$  on the fourth or fifth day, giving rise to much brain disturbance. The tongue

becomes dry, the belly distended and tender on pressure. The diarrhoea is more severe, and the emaciation more rapid. It is often difficult to arouse the child from its lethargic condition. As the disease progresses the teeth and lips become covered with a black dry incrustation. Notwithstanding the greatest care, the prostration is sure to be excessive by the time the crisis has arrived (at the end of the second or third week). Fortunately convulsions are not nearly so frequent when a high temperature is attained by a gradual process, as happens in this disease, or in the course of a lengthened fever, as when excessive heat supervenes suddenly. Recovery from a severe enteric is always an exceedingly gradual process.

This disease, after the lapse of a couple of days, is distinguished readily distinguished by its symptoms. Commencing in the same way as most other fevers, an immediate recognition is often not possible; but there are special characters of its own which will serve to distinguish it, viz., the preceding languor and drowsiness, the steadily and slowly rising temperature, the abdominal distention, the diarrhoea, the great prostration, and the rash if discovered. From the eruptive fevers it may be distinguished in the same manner as mentioned at page 174 when talking of simple fever.

Enteric fever usually runs a mild course in childhood, and the great majority of cases which are properly nursed recover satisfactorily. The following may be regarded as being signs of good omen:—

Favourable and unfavourable signs.

a mild commencement, but little diarrhoea, absence of abdominal tenderness on pressure, a morning temperature not exceeding 101° to 103°, an evening

CHAP. XIX.

temperature not exceeding 104°, and a moist tongue ; and during the third week a morning temperature 3° less than that of the evening, which latter should gradually decline. If the opposite conditions prevail, there is cause for anxiety ; and if there is bleeding from the bowel or deep stupor, the case is extremely grave.

Treatment.

Those who wish to treat typhoid fever successfully will do well to peruse the chapter on "fever," and to act upon the general principles therein laid down. The state of the patient so frequently varies, that if there are not guiding principles (which are understood) at command, little good is likely to be done by meddling.

Nursing.

But in addition there are points connected with the treatment of typhoid fever which demand special consideration. The first, and by far the most important, is nursing. Nothing that a doctor may do or say will avail without good nursing. The life of the patient *always* depends upon the manner in which this office is performed. The nurse must be sufficiently intelligent to have some idea of the enormous waste of body material which is going on, and that at the same time the bowels are in a state of excessive irritation, if not of actual ulceration. While, therefore, it is of the greatest importance to introduce nourishment, we must be most careful to avoid irritating the bowels. Over-distention of the stomach, whether with food or fluid, should never be permitted.

Importance  
of.

Small quantities used frequently is the rule to observe, the great necessity for supporting the vital powers being ever kept in mind. Milk diluted with barley water or thin arrowroot, constitutes the best

Diet.

form of food. We should be in no hurry to commence chicken or mutton broth, or other form of animal food than milk. When exhaustion is great soup may be given as an excellent stimulant once or twice in the day, but it should never be wholly or chiefly trusted to. If the bowels are not very irritable a small quantity of a light corn-flour pudding may be cautiously given twice a day, but the existence of much diarrhœa will prohibit this as well as broth. Every two hours at least, except that the child should never be waked from a sound sleep, simple food must be given in small quantities, in the face of all objections on its part, and irrespectively of the trouble it will certainly entail to the nurse. When there is exhaustion sufficient to render the administration of food difficult, it is a good plan to employ an injection of a small wineglassful of pancreatised milk (*see* receipts) to which may be added a teaspoonful of essence of meat. Of course such an enema is to be retained, an object which is easily effected by pressure with a folded towel for a few minutes after the pipe has been withdrawn. Cold water may be liberally allowed, but in small quantities at a time. Barley water will allay the thirst more effectually. Tamarind water should never be given, on account of its purgative properties.

The ventilation of the room should be thorough; all evacuations from the bowels should be received on napkins or folded sheets, and such soiled linen should be immediately plunged into disinfecting fluid and removed from the house. Heavy bed-coverings are to be avoided, the room should be kept still, and every effort made to encourage sleep and tranquillity.

Ventilation  
and disinfection.

CHAP. XIX.

Bed sores.

The child's back and buttocks should be daily examined for any red or angry-looking patches, indicating the threatening of bed sores, which should be guarded against by the use of soft pillows or air cushions; and by painting the inflamed parts with white of egg beaten up with spirits of wine.

Sleep.

To secure sleep, the warm bath (98°) and subsequently anointing the body with oil, will be found very useful. Medicines, as will be explained, may also be needed for this purpose.

Stimulants.

Towards the end of the second week it will frequently be desirable to employ wine or brandy, in quantities proportionate to age; a teaspoonful of the latter three or four times a day with four or five times its bulk of water, may be required by a child three or four years old. But should the symptoms become very severe, with great exhaustion, clammy perspiration, prostration, and diarrhoea, the quantity of spirits should be considerably increased, according to the effect produced (see p. 171). Tea, as a preventer of waste, may be given in moderation if the child will take it. When there is much exhaustion the food should not be given altogether cold (p. 64).

Rest.

The child should be spared every possible exertion. Night and day his every want should be instantly attended to. As far as possible, all his whims should be humoured. The nervousness consequent upon excitement is quite capable of greatly aggravating the symptoms.

Medical remedies.

Throughout the whole course of this affection no opening medicine of any kind should be given. With a very moderate diarrhoea we need not interfere,

because if we altogether lock up the unnatural excretion it will readily decompose in the intestine, and produce further irritation or inflammation. On the other hand, we should never, if we can prevent it, allow anything like sharp or constant purging. The number of the motions will, to some extent, guide us; two or three in the twenty-four hours may be permitted, but their nature is a surer pilot. A very watery purging should be vigorously checked by astringents and aromatics (29). Scanty slimy motions will seldom benefit by the administration of astringents, but an occasional enema of tepid water will greatly relieve the condition. Aromatics (7) will be useful by relieving flatulency and distension; but chiefly to a careful diet must we trust to regulate the bowels generally. Poulticing the abdomen often proves very beneficial under these latter circumstances. Should the symptom (diarrhoea) persist, the addition of a drop or two of laudanum (see enemata) to one of the injections, which should be small with the intention of its being retained for a time, may judiciously be made.

Should there be bleeding from the bowel, the utmost quietness must be observed; the patient should never be moved or raised into the erect position, and prescription No. 30 should be given every hour till the symptom has ceased.

Cold or tepid spongings of the surface frequently, followed by oil inunctions, will be of essential service by reducing the temperature and imparting a sense of comfort.

Distention of the abdomen and pain on pressure should always be treated by fomentations and light poulticing.

## CHAP. XIX.

## Fever mixture.

## Stimulants.

## Delirium met by opium.

## Great caution as to food after recovery.

## Disinfection.

At the outset of the disease a fever mixture (38) may with advantage be given, but it need not be continued long, and only used subsequently during periods when the heat is high.

When depression sets in, after the tenth or twelfth day, a stimulant mixture (64, 65) will be found very useful in conjunction with wine or brandy as previously described.

Delirium and inability to sleep, if not overcome by the spongings and inunctions, will frequently yield to a dose of chloral (see sedatives), or opium (a single drop of laudanum for every year of age completed. *Never more* in twenty-four hours).

As the fever subsides, the stimulants and nutriment ought to be increased, but very cautiously. Solid food should not be allowed for a week after all active symptoms have disappeared. Meat is not to be ventured upon for at least six weeks after complete recovery.

During convalescence, quinine in tonic doses (66) will be found useful. Chest attacks are not infrequent after typhoid fever, unless precautions against cold be taken.

From beginning to end of the disease the measures for disinfection and the precautions laid down at pp. 129 and 140 should be carried out.

## CHAPTER XX.

### II.—FEVERS IN WHICH THERE IS A CESSATION OF THE HEAT, TEMPORARILY.

#### (1) REMITTENT FEVER.

THIS illness is caused by absorption of the malarial CHAP. XX.  
poison (p. 134). Chills may act as exciting causes of Causes.  
attacks in those who have been previously exposed to  
malarial influences. It would seem that the usual outlet  
(the perspiration) being cut off by cold, a sufficiency  
of the poison is accumulated to develop an attack.

Suddenness and violence usually characterise the Symptoms.  
commencement of this form of fever. There is very  
little warning of its approach—at least, not such as  
the child is able to appreciate. Pains in the limbs,  
loins, and head are, however, not infrequent, and  
vomiting is a pretty constant symptom. Sometimes  
there is a violent attack of copious watery diarrhœa.  
A shivering fit is very seldom noticed, though the  
hands and feet may be felt to be cold. In a few  
hours the body is burning hot. There may be a  
drowsiness, or tendency to convulsions. The high  
temperature will probably remain for eight, ten, or  
twelve hours, when a perceptible diminution of the  
fever will be observed—perhaps by 3 or 4 degrees—  
though it will not completely disappear. The decline

is generally accompanied with some amount of perspiration; but this is not always so, and it usually occurs in the morning. Early in the afternoon a rise again commences, abatement setting in early in the night. The length of the remission (p. 162) and the period of the day at which it occurs are variable. Generally, however, there are six or eight hours of abatement, and the time of relief includes the morning and forenoon. When the paroxysm is at its height there is a good deal of restlessness, possibly delirium, and convulsions if precautions be not taken. Thirst is always great, the tongue is coated, the breath foul, and the respiration extremely rapid. The paroxysms, as described, repeat themselves until checked by treatment.

Favourable  
and unfavour-  
able signs.

A very high temperature, a dry brown tongue, much delirium and trembling of the hands, are anxious signs. Improvement may be either gradual or sudden. If the former, it will be ushered in by increased length of the remissions, and diminished height of the thermometer-reading during the hot stage, while at the same time a general sense of relief is experienced, and the nervous symptoms become less conspicuous.

Low type.

Remittent fever sometimes assumes a low type; so much so that without the aid of the thermometer it might not be known that there is any fever present.

Duration.

This form of fever observes no definite duration. Upon treatment chiefly will depend the length of the illness.

Prospects.

The prospects of the case are usually favourable, but it is a common and a serious affection.

Distin-  
guished.

Remittent fever is distinguished from typhoid fever

by the suddenness with which it comes on, by the absence of persistent diarrhoea, abdominal symptoms, and rash, and by its very marked remissions. From simple continued fever it is known by the markedness of its remissions. From the eruptive fevers by the distinctions noted on p. 174.

Nervous disturbance is to be apprehended very early <sup>Treatment.</sup> in this complaint. Our first indication, therefore, is to guard against the effects of over-heating, in the manner described at pp. 163—168. If natural purging has not already occurred, the bowels should be freely opened <sup>Preliminary management.</sup> (Nos. 52, 53, 56). Shortly after the aperient, a fever mixture (38 or 36) should be begun and given every hour. The bed-clothing should be light, and the ventilation of the room perfect. The utmost simplicity as regards diet should be observed. Much benefit will be derived from the use of the tepid bath at night as a sedative, and cold may be applied to the head if it proves grateful.

At the commencement of the fever.

With the first well-developed signs of remission, Quinine. the bed-covering may be increased, and a full dose of <sup>Proper time for administration.</sup> quinine (No. 67) administered. By the first signs of remission, I mean when moisture is felt upon the forehead, and when the temperature has declined about  $2^{\circ}$  from the highest point it had reached. The fever mixture may now be omitted.

Not infrequently these means will cure the fever in its first stage, but more usually a second paroxysm occurs, though probably it will be of less intensity. Without treatment, the second paroxysm is as a rule more severe than the first.

Quinine should not be given while the temperature is rising. During its decline, and when there is some perspiration, no matter how slight, is the proper time ;

When not to give quinine.

but it is a serious mistake to wait till the fever has altogether disappeared, before resorting to quinine; and it is an almost equally serious mistake to employ it in only small doses; but as before remarked (p. 179) it is safer to withhold the drug while there is torpor and a tendency to convulsions. Then we must first reduce the heat of body and thus restore the nervous equilibrium, as a preparation for the quinine.

Food.

At no period is the strength to be allowed to decline. Here we have no abdominal complications as in the fever (typhoid) last described, so we are in a position to administer food as liberally as we can prevail upon the patient to take it. Of course solid meat, and other articles difficult of digestion, should not be given, even if the patient could be induced to eat them.

When to give stimulants.

Should what are called "typhoid symptoms" \* (dry brown tongue, hard dry lips, great prostration, and black incrustations upon the teeth) supervene, as they sometimes will when the fever persists for a few days, stimulants should be used in the shape of wine or brandy, and a stimulant mixture (64, 65). Then, too, egg-flip and beef-tea should be given frequently.

As a rule, there is only opportunity for a single dose of quinine daily, during the severity of the attack. If, therefore, a fully sufficient dose is not administered, clearly we cannot hope for benefit from the drug. But as the fever declines, the interval of remission lengthens,—then we had better divide the dose,

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\* A general term applicable to this series of symptoms occurring in the course of any disease. The expression should not convey an impression that these are exclusively symptoms of typhoid fever. (See p. 171.)

giving the medicine twice a day, half the original quantity each time. Even after the complete cessation of the fever it is right to continue quinine as a single half-dose daily for at least a week or ten days. It may then be omitted, and chiretta (69) substituted for it.

If, after the sickness, debility persists, and the patient remains pale and worn, quinine and steel (68), or the syrup of iodide of iron (71), may, with great advantage be used, and persisted in for a month or six weeks.

## CHAPTER XXI.

### FEVERS IN WHICH THERE IS A CESSATION OF THE HEAT, TEMPORARILY.

#### (2) INTERMITTENT FEVER, OR AGUE.

CHAP. XXI.

Causes.

Symptoms.

Peculiarities  
of—in the  
child.

Course of an  
attack.

THE causes are the same as those of remittent fever. There is a cold, a hot, and a sweating stage, succeeding which there is a complete intermission of the heat and of all the symptoms.

The younger the child, the less the regularity observed by the symptoms. Frequently there is an absence of anything like shivering,—indeed, it is unusual, unless the child be over three or four years of age. Occasionally, but rarely, the attack subsides without sweating. The stages generally are of shorter duration than in the case of the adult, and sometimes even two paroxysms occur in the twenty-four hours. The hot stage is, however, always well marked.

The premonitory symptoms are very slight, often not sufficient to attract any attention. The child does not actually feel ill, but he yawns, refuses food, and lolls about. In most cases I have observed that an attack is preceded by an unusually copious flow of urine, but after the fever has become established the urine is red and scanty. The fit begins with a feeling of cold; the skin becomes pale, shrivelled, and rough

("goose-skin"). The finger nails may be of a bluish colour. The skin feels cold, though the thermometer will even now show an unnatural rise of temperature, and the internal organs are congested from the blood being driven in. Shivering may ensue, but it is rare in young children. This stage may last from a quarter of an hour to two or three hours, and then succeeds the hot stage. A couple of hours after the fever has commenced, the temperature may rise to 105°, 106°, or even more, and the hot stage lasts from two to four hours. The decline down to the natural standard, or even a little below it, is equally rapid; according to the amount of perspiration, so will be the rate of cooling.

Intermittent fever, when untreated usually observes periodicity; returning every day at the same hour, every other day, or every third day. When recurring daily, the cold stage is short and the hot stage long; and when every third day, the opposite holds good.

When a child, who immediately before was in its usual health, is observed to decline its food, to yawn, to loll about, and yet not to complain of feeling actually ill; if at the same time the hands are felt to be cold while the thermometer shows the bodily heat to be greater than usual,—we may be pretty sure an attack of ague is coming on. The extreme suddenness of the fever heat without any warning symptoms is sufficient to distinguish it.

An attack of ague is not in itself usually dangerous; Prospects. but it should never be disregarded, because it is an indication that the child has come under the pernicious influence of the climate, by which, if he be

CHAP. XXI.

neglected, much constitutional injury may eventually be effected. Indirectly, the effects of ague cause an immense amount of mischief to children in India; indeed, the remote results are really much more fatal numerically than cholera, but because an attack is not immediately dangerous, such cases are ignored.

Treatment.

While the child complains of feeling cold, let it be well wrapped up; a bottle of hot water rolled in flannel may be put to its feet, and some warm tea given. If the bowels be confined, a dose of castor oil (48), or Gregory's powder (50) had better be administered. When the heat of the body begins to cause inconvenience, the bed clothing should be removed, and great attention devoted to the effects upon the nervous system, the means for reducing temperature (p. 163 *et seq.*) being put into practice as necessity demands. As to food and nursing, the rules recommended for the management of remittent fever are to be observed. From the commencement of the hot stage, the fever mixture (38 or 36) should be given every hour till the perspiration has been freely established. Now is the time for quinine. It is most important that this particular period be seized upon for the administration of the medicine in a full dose (67).

Time to give quinine.

Mistakes as to quinine.

As to clothing.

The old rule of waiting till an hour or so before the next attack is due, is an extremely bad one. The quinine then increases the irritability and nervousness, while it produces very little effect upon the disease.

There need be no hurry in changing the clothes which have been wetted with perspiration. To do so prematurely risks chill and suspends further action of the skin.

During the cold and hot stages.

Eight or ten hours after the first dose of quinine, the <sup>CHAP. XXI.</sup> medicine should be repeated. The chances are that <sup>Repeat the</sup> the attack will not return, if, in the meantime, the <sup>quinine.</sup> child has been kept warm.

A repetition of the attack is to be treated in the <sup>Management</sup> same way as above, and after complete cessation, the <sup>after cure.</sup> quinine should be continued in diminishing doses twice a day for ten days or a fortnight. The greatest care must be taken to avoid chill.

**THE SUBSEQUENT EFFECTS OF MALARIAL FEVERS.**— <sup>After effects of malarial fever.</sup> Because these fevers are not attended with immediately serious consequences, they frequently meet with but little attention. Attack succeeds attack, at more or less long intervals. Each is "cured," and no more is thought of it till the next occurs, when it meets with a similar amount of consideration. In the meanwhile the changes which are at work are not observed, because they are so gradual in their outward manifestations. They are slow, it is true, but they are very certain.

Almost every organ in the body is involved. <sup>Constitutional effects.</sup> Internal congestions are the earliest mischief. The spleen may become more or less enlarged. Intercurrent attacks of diarrhoea and dysentery are not infrequent. The child becomes pale and flabby. Possibly dropsy or jaundice may occur. The quality of the blood suffers in a most marked manner. It becomes watery, and contains but feebly nutritious qualities. In short, a persistently deleterious influence everywhere pervades the body, resulting in steadily advancing deterioration of the health, of which bloodlessness is the chief visible sign.

Up to a certain point, this condition is quite cap- <sup>Seriousness.</sup>

able of remedy; but beyond that point, remedies are of no avail; a stage of blood destruction may be reached which cannot be passed with hopes of recovery. Many such patients die, and their deaths are attributed to "diarrhoea," "debility," "atrophy," or whatever condition most attracts the attention at the moment.

Information from the temperature.

Throughout the whole course of the obscure illness or, it may be, mere general constitutional depression, which succeeds agues; or which, even sometimes without agues, indicates the malarial state, the thermometer should be regularly used. It will usually be found that the evening temperature rises to some point over 100°, it may be to 101°, but seldom more. So long as this is the case we may be sure evil influences are at work. In the stage of recovery there usually occur intervals of a few days without a high temperature, which, however, may again recur and persist for other periods of some days, the intervals becoming longer, till there ceases to be any elevation. If after a fair trial of remedies the temperature persists without alteration, we may be certain the illness is gaining upon us.

Treatment.

The treatment of this state of malarial saturation is very important and very simple. It may be summed up in a few words: milk, quinine, iron, warmth of body, non-exposure, and, if need be, change of climate.

Milk diet.

I look upon it as most important that in these cases the diet should consist largely of milk. It is a remedy which here possesses great value, and one without which the child is not having a fair chance. An attempt should be made to induce a child of four or five years of age to consume a scrupulous quantity of milk daily.

Quinine should be employed in full doses (67) twice daily, so long as any signs of active fever remain. As soon as these are overcome the quantity may be reduced, and it should subsequently be given in combination with iron (68) for about three months. Should this prescription seem to irritate the bowels, the syrup of iodide of iron (71) may be substituted; but in such a case, quinine must still be given in the intervals between the doses, twice a day. When the febrile state has wholly ceased, a prolonged course of arsenic and iron (3) is often more useful than quinine and iron.

CHAP. XXI.

Quinine.

Iron.

Diarrhœa should always be at once checked (29). Diarrhœa.

Moderate exercise during safe hours of the day Exercise and is essential. Fatigue should never be incurred. sleep. Plenty of sleep should be indulged in, and if the child feel so inclined, he may be permitted to spend his mornings in bed. The exhaustion which the early morning walk is apt to induce, proves hurtful in these cases; besides which, the cold of the morning air, if great, will be injurious.

If after a fair trial, of say a month, the febrile state remains constant, the case ought to be removed from the locality—to sea, if possible; if not, to the hills. From a mere change of climate from one district to another but little good need be expected, though it sometimes is useful.

Of all conditions of health appertaining to the climate of India, this kind of chronic illness is *the* one calling for removal from the country to Europe.

Change of climate.

## CHAPTER XXII.

### III. THE ERUPTIVE FEVERS.

#### (1) MEASLES.

CHAP. XXII. **THIS** is an infectious continued fever, accompanied by **Definition.** a copious characteristic eruption. Infection, according to Squire, begins with the commencement of a case and lasts for about three weeks.

**Cause.** The disease is spread only by infection from person to person, either directly or through the medium of a third person. When the skin is scaling off is the time of greatest capacity for spreading the complaint. The occurrence of this illness usually protects from a second attack. A period of from 10 to 14 days elapses from the time of exposure to infection till the disease commences.

**Symptoms.** A sense of chilliness, with headache, thirst, a foul tongue, and feverishness are the earliest signs which show themselves. At the same time the child seems to be suffering from a cold in the head ; he sneezes, his eyes are watery, there is usually some cough, and the eyelids are puffy. The feverishness and general symptoms increase. On the fourth day of their continuance, the rash makes its appearance, first on the forehead and face, from which it gradually extends over the whole body. This rash is of a dull brick-red colour, consisting of innumerable small flat-like spots, slightly elevated above the surface.

**The rash.**

The fever does not diminish with the appearance CHAP. XXII.  
Progress. of the rash; it may, indeed, increase, but the cold and cough either wholly vanish, or become greatly lessened at this period.

The rash lasts for three days before it begins to fade, and with its decline the fever and other symptoms subside gradually, till on the ninth day of the illness they have all disappeared, leaving behind only redness and scaling of the skin. Sometimes itching Conclusion of of the skin is almost intolerable, either when the case. eruption is at its height or when the scaling commences. Occasionally the glands of the neck become greatly enlarged in the early stage of the illness, and then there is usually a good deal of sore throat —the latter being most common when the eruption is fading.

In India, measles rarely assumes a malignant type. Seldom severe Should the eruption be copious and of a purple colour, in India. should the tongue become dark and brown, the prostration great, and the chest symptoms severe, the disease has assumed a very grave form.

Sudden disappearance of the eruption is a sign of Bad signs. significance, generally indicative of bronchitis or other lung complaint. So, a continuance of the high temperature after the rash has, in due course, disappeared, is unfavourable.

Measles is easily distinguished from other complaints by the character of the eruption and the time of its appearance. Distinct elevated red papules appear on the fourth day, whereas the eruption of scarlatina is a uniformly diffused red blush, appearing on the second day, and the more distinct elevations of small-pox appear on the third day. Unlike small-

:

**CHAP. XXII.** pox, the fever does not subside with the appearance of the eruption. The watery eyes, sneezing, cough, and swelled face are very characteristic of measles as early symptoms.

**Prospects and frequency.** In India the prospects are believed to be decidedly favourable, though the affection is common enough, and figures prove that the disease in that country is not one to be ignored, a considerable fatality sometimes happening. The severest mortality occurs between one and three years of age.

**Treatment.** From the earliest moment, the child should be confined to bed in a room properly ventilated but free from draughts. In the cold weather it will be advisable to light a fire in the room to preserve the temperature at about 65°. It is very important to guard against cold, but a higher temperature should be avoided, lest we add to the bodily fever-heat. The fever mixture (36) will soothe the cough and promote the action of the skin. The inhalation of steam from over a jug is grateful and lessens coughing. The fever drink (63, b) may with advantage be allowed. Sponging the surface with vinegar and water allays irritation of the skin, and generally exercises a soothing influence. Purgatives, as a rule, are to be avoided, the bowels being apt to become irritable. From beginning to end a starvation system should be avoided, though the diet should include only light and easily digested articles.

**Stimulants.** Should the severer symptoms manifest themselves, it will be necessary to resort to stimulants, both in the shape of medicines (64, 65) and wine or brandy; and the greatest attention must be given to the administration of nourishment.

Troublesome cough and hurried breathing should be encountered with large poultices to the chest, followed by turpentine stupes. It may also be necessary to give an emetic (39) to assist in the expulsion of phlegm. The danger of measles "depends almost exclusively upon its complications, and as in their absence there is little to excite alarm, so there is little to call for treatment" (West). Disinfection should be carried out as recommended on a former page.

The complications which sometimes accompany or follow measles (though less frequently in India than in England) are—*(a)* Convulsions, usually appearing at the commencement of the case, when they are not of such serious import as when they occur later. *(b)* Bronchitis and inflammation of the lungs are the most dreaded of all complications, but the climate of India is unfavourable to such development. *(c)* Ophthalmia of a painful nature is sometimes very troublesome; but by strict attention to cleanliness, the allowance of a liberal diet with wine and tonics, and the almost hourly use of the ordinary eye lotion (23), a rapid cure will be effected. *(d)* Discharges from the ear are not very common, but when they do occur they are most troublesome. They most usually happen when the disease is disappearing, and are probably caused by cold. *(e)* Chronic congestion of the throat with a husky voice, and possibly some tendency to diphtheritic symptoms. *(f)* Without the occurrence of any one of these complications, measles sometimes produces a profound impression upon the constitution, which may not become re-established for a long time, varying from a few

CHAP. XXII.

Chest complications.

Complications.

Constitutional impression left behind.

Management  
of this state.

months to as many years. The most constant indications of this state are a pale, bloodless appearance, duskiness of skin, flabbiness of the museles, languor, cessation of the progress of dentition, crossness, and very disturbed nights. Such symptoms should meet with prompt attention, lest disease should insidiously and permanently affect the child's constitution. A life almost wholly in the open air, a generous diet, careful protection from cold, the allowance of wine in moderation, and the administration of cod-liver oil and iron (71), are the remedies to adopt.

Cau'ion as to  
change of  
climate.

When a child falls into this state of health, from which he cannot very quickly recover, the temptation to send him to a colder climate may arise. It is not, however, advisable to do so, unless the heat of the place at which he is already resident be so great as to occasion exhaustion, and the climate which it is proposed to adopt be very moderate indeed.

German  
measles.

Distinction.

There is an affection termed *German Measles* which, however, is different altogether from and does not protect against true measles. It rarely requires any treatment, but the above rules may be followed. It differs from measles, for which it may readily be mistaken, in these respects:—There is a sudden onset with very little previous sneezing or coughing. The temperature does not rise gradually before the rash appears, nor fall suddenly afterwards, as it does in measles. The eruption lasts only two days, commencing on the cheeks, wrists, and ankles, and each point appears distinctly separate. A mild case in which the fever subsides before the rash has disappeared is probably one of German measles.

## CHAPTER XXIII.

### ERUPTIVE FEVERS.

#### (2) SCARLATINA.

SCARLATINA and scarlet fever are different names CHAP. XXIII. given to the same disease. The former word does <sup>Confusion of</sup> not express any minor form of the affection, as is <sup>names.</sup> sometimes supposed.

Scarlatina is a highly contagious continued fever, Definition. accompanied by a general red blush of the skin. The force of the disease is expended upon the throat.

Scarlatina only arises from infection—generally Cause. directly from a sick person; but the disease may be conveyed by clothes or in milk. The disease com- Incubation. mences about five or six days after infection, but possibly earlier. If more than a week elapses without symptoms, after known exposure, we may reasonably conclude that the child has escaped.

The symptoms vary greatly according to the in- Symptoms. tensity of the attack. There may be a mere indisposition with the characteristic redness of the skin; or there may be a furious onset, accompanied with delirium, a scanty rash, a dry brown tongue, and violent inflammation of the throat.

An ordinary case commences with the usual symptoms of fever, which are accompanied with vomiting, pains, and brief shivering. Attention is soon called

**CHAP. XXIII.** to the throat by complaints of soreness and difficulty of swallowing. The tonsils will be found to look red and angry, behind the furred tongue. Very probably one or two of the glands of the neck will enlarge and become painful.

**Peculiarity of the tongue.** The appearance of the tongue soon changes, the whiteness giving place to bright redness, through which will appear numerous light-coloured spots, a condition known as the "strawberry tongue."

**Rash on second day.** On the second day the eruption appears; first on the neck and upper part of the body, whence it extends over the whole trunk and limbs. With the manifestation of the rash the bodily heat increases, and as it progresses the throat becomes somewhat worse.

**Description of rash.** The rash is uniformly red, it disappears on pressure, but almost instantly returns. It lasts but a short time, reaching its height by the end of the third or

**Disappears on 4th day.** beginning of the fourth day of the illness, and totally disappearing on the sixth day. Simultaneously the

**Fever & local symptoms subside together.** throat soreness and fever disappear, and shedding of the skin (desquamation) commences, in the form of bran-like scales, except from the soles of the feet and palms of the hands, where it separates in large pieces.

**Desquamation.** Desquamation may last any time from eight to twenty days (Steiner), and it must be remembered that till the process is complete the patient is intensely capable of propagating the disease.

**The most infectious period.** Broadly speaking, the danger to a case may be estimated by the violence of the throat affection. Rapidly destructive ulceration of the throat is attended with very great bodily prostration, delirium, a weak pulse, a dry fissured tongue, and a scanty eruption. The patient's condition is then very critical.

**How to estimate the danger.**

However mild a course the disease may run, it CHAP. XXIII. should be borne in mind that the kidneys suffer more <sup>The kidneys.</sup> or less in all cases, and that actual disease of these important organs may be excited by exposure to cold or errors in diet, and that this danger is at its height just as the child seems to be perfectly safe,—when all symptoms have vanished, during the third week. Caution most A dry skin, pallid complexion, a smoky colour of the required when urine, return of feverishness and puffiness of the it seems least necessary. face, point to affection of the kidneys (see “Dropsy”).

Scarlatina is recognised by the throat affection and Distin-  
the character of the eruption. Measles commence guished. as a cold in the head a couple of weeks after exposure to infection; scarlatina with sickness, high fever, and sore throat. The eruption does not appear till the third or fourth day in measles; on the second day in scarlatina; and when it is seen there can be no confusion.

The prospects of the case will depend upon the Prospects. presence or absence of those symptoms mentioned above as indicating a serious state of matters. The mildest case of scarlatina is, however, attended with some danger, more from the subsequent effects than from the disease directly.

Happily, in India this disease is extremely rare; Frequency. indeed, till late years, it was alleged that it was wholly unknown in the country, but this is not so. In England, scarlatina is, with the exception of convulsions and diarrhoea, the most fatal of all infantile affections.

Rigid isolation for the safety of others, and the Treatment. freest ventilation compatible with the absence of actual cold, both for the patient's own sake, and to

CHAP. XXIII. obviate the chances of conveyance of the infection by or to others, are matters of primary importance. Confinement to bed for two or three weeks at least is essential in all cases. Sucking ice will relieve the thirst and throat, cool the body, and check the vomiting. Lemonade (60) or congee water may be liberally allowed. A very simple diet of arrowroot, milk diluted with lime water, and chicken broth, to which, later on, it will be necessary to add stronger soups, should be given. The inhalation of steam from over a jug will be grateful to the throat. When the throat is troublesome, Waring recommends inhalation of the fumes of hot vinegar. Sponging the surface with tepid water is useful and pleasant to the patient. The worse the throat is, the more concentrated should be the nourishment; should it proceed to ulceration, and the tongue become dry, brandy or wine must be given in addition, without stint.

Stimulants.

Inunctions.

Medicines.

Applieation to throat.

Dr. West speaks very highly of inunctions of suet into the whole surface twice a day, as being more effectual, and giving more permanent relief than sponging. In any case, oil or suet inunctions should be practised during the stage of skin-scaling, daily after a tepid bath.

As to *medicines*, a mild case requires very little interference. Even in a tolerably severe case it is not well to be in too great a hurry to rush to active measures. When the fever is at its commencement the fever mixture (38) should be used. Only in case of necessity is it right to give a purgative, and then it should be of the simplest nature (castor oil or Gregory's powder). Should the throat be very sore, it is a good plan to brush it with a solution of tincture

of steel and water; otherwise it will be sufficient to allow the patient to suck ice, while either a warm linseed poultice or cold compress is applied externally, and constant gargling with a saline solution (common salt,  $\frac{1}{2}$  ounce to one pint of water), to dissolve the mucus, is carried on. As the fever declines the mixture may be discontinued, and a stimulating medicine (64) substituted for three or four days, when it, in its turn, should be replaced by quinine (66) or chiretta (69).

Unfortunately the troubles of scarlatina do not end with the attack. *Complications.* Dropsy, inflammations of the ear, abscesses of the glands of the neck, and general debility of a serious nature may succeed.

*Dropsy*, when it occurs, appears during the period of skin-scaling, and is generally the result of cold, the child having been allowed up too soon. The vapour bath with saline purgatives, such as Epsom salts and senna, or Seidlitz powder, together with steel and quinine (70, 68), are to be employed to meet this emergency, while, at the same time, the most stringent precautions against cold are taken (see "Dropsy").

*Inflammation of the ear* is to be treated upon general principles (see "Ear").

*Swelling and abscesses of the glands* are to be treated with fomentations and poultices till they subside, or they should be lanced by a competent person; while the best nutriment, such as beef-tea, egg-flip, milk, and so forth, must be given with no sparing hand, and quinine and steel (68) administered persistently.

As after measles, so after scarlatina, though with even greater intensity, a state of *constitutional debility*

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**CHAP. XXIII.** may become established, and months if not years of judicious care may be required to induce a return to perfect health.

**Caution.**

N.B.—For a long time after recovery from scarlatina, the greatest caution must be exercised in permitting the child to go out of doors (even when the air is only cool the convalescent should be kept indoors), and in avoiding errors of diet.

The special measures previously given regarding the prevention and disinfection of this extremely contagious complaint should be attended to throughout (p. 139).

## CHAPTER XXIV.

### ERUPTIVE FEVERS.

#### (3) SMALL-POX.

THIS disease is only propagated by means of infection CHAP. XXIV.  
Cause. — It is a most virulently infectious complaint, which may be communicated by the exhalations from the body and lungs of the patient so long as any of the scabs remain adherent to the body. It may be carried from person to person by the clothing, or conveyed through bedding. The germs will retain their vitality for a long period, and may live in wall paper, old clothing, &c., for months, if not for years. About twelve days elapse from the time of exposure to the infection till the disease makes its appearance.

There are two varieties of small-pox, termed the *Varieties*. *distinct* and the *confluent*. In the former the pustules remain distinct the one from the other. In the latter they run together into large patches. These so-called varieties are really only differences in degree of severity, the seriousness being proportionate to the quantity of the eruption, unless complications arise.

The course the disease runs will be better understood by dividing it into stages as follows:—The *first* Stages of the  
complaint. stage is that of fever, and lasts from about forty-eight to sixty hours; the *second* is that of eruption, and

CHAP. XXIV. lasts for eight days or so; and the *third* is that of the secondary fever, which lasts for three or four days.

Symptoms of 1st stage. First Stage.—The earliest symptoms are those which are common to other febrile disorders, but shivering is more marked than in any except ague. Vomiting and headache are usual. In elder children, pain in the back and loins is so severe as to be almost characteristic, but in those of tender years it is so slight as hardly to attract attention. The temperature runs up to 103° or 104°, the tongue is furred, and the urine thick and scanty. These symptoms continue with increasing intensity till the third day, when the eruption appears—at first on the forehead and face, then on the wrists, and subsequently upon the body and limbs.

Eruption on 3rd day. Symptoms of 2nd stage. Second Stage.—Before the eruption is plainly visible it can be detected by passing the finger over the forehead, where the rough feel of the hard pimpls beneath the skin may be at once recognised. With the eruption comes relief, the fever greatly subsides, and all the symptoms are mitigated. At first the rash consists only of a number of simple red elevated papules, which come up through the skin, and do not

Fever subsides when eruption appears. Description of eruption. merely lie upon its surface. They are peculiarly hard, nor do they contain any fluid till they are forty-eight hours old, when a whey-like liquid makes its appearance at the top of each. The surface of each vesicle, instead of being conically distended, is centrally depressed or saucer-shaped. After the lapse of another period of forty-eight hours each pock becomes of a yellow colour, the clear fluid contents having been converted into matter. On the eighth day from the commencement of the disease the rash

has attained its height. During the process of ripening—that is, while the vesicles are changing from white to yellow—the skin <sup>Swelling of</sup> ~~the skin.~~ much so that the eyes may become closed, and the whole appearance be dreadfully distorted. The eruption may involve the interior of the mouth and throat, sufficient to cause the patient distress, but the amount of fever throughout this stage is not great.

Third Stage.—The eruption has reached maturity <sup>Symptoms</sup> ~~of 3rd stage.~~ on the eighth or ninth day of its age, or eleventh of the disease. The pustules now burst and discharge their contents, with the result that the fever returns, but with something less than its original intensity. For three or four days this state of affairs continues, <sup>Secondary</sup> then the scabs begin to dry and fall off, leaving the <sup>fever.</sup> skin of a spotted red colour—a condition which not infrequently lasts for a fortnight.

In CONFLUENT SMALL-POX the general symptoms <sup>Confluent</sup> and stages are as above related, but this form of the <sup>small-pox.</sup> affection runs a much more violent course. The primary fever is more severe; there is much vomiting and not infrequently convulsions. The eruption comes out earlier; it matures more rapidly; it is much more profuse, and is so closely packed together as to show no intervals of sound skin between the vesicles. When the pustules break, the matter runs together, forming large brown or black scabs, which have an abominable smell. Of course such a great drain upon the constitution produces seriously depressing effects. With the secondary fever, which sets in earlier than in an ordinary case, there is liability to complications; delirium and cough being the most frequent.

CHAP. XXIV. Once the eruption has appeared, there of course is no longer any doubt as to the nature of the case; but in the earlier stages the distinction is not so easily made. The following points will help to elucidate the question somewhat. Vomiting as an early symptom is very constant in small-pox, and is more severe than in *measles*; the back-ache and high rise of the temperature before the rash appears, do not happen in measles. There is the absence of cold in the head and cough, which are constant symptoms in measles. The measles spot is much less raised than the small-pox papule, nor is it hard and "shot-like" under the finger. From *chicken-pox*, small-pox may be known by the mild fever of the former. The rash of the former complaint comes out within twenty-four hours, and that of small-pox not for at the least forty-eight hours. The eruption of chicken-pox is a large white, rounded bleb, which never becomes mattery; that of small-pox is not so large, it is saucer-shaped on the surface, and its contents soon become mattery.

## Prospects

The prospects of a case depend (1) chiefly upon the fact of previous vaccination or the reverse. Even imperfect vaccination will in all probability modify the attack and render it comparatively harmless (p. 99). (2) A mild introductory fever indicates a mild attack. (3) A scanty eruption is proof to the same effect, and the liability to complications is then small. (4) The most favourable age for an attack is between the tenth and fifteenth year (Marson), and of course (5) in a disease of such exhausting suppuration, a previously strong constitution will justify us in auguring more favourably than when a subject in an opposite state

of health is attacked. (6) Confluent small-pox is always dangerous, and when occurring in the non-vaccinated it is very fatal, about 50 per cent. dying. (7) Chest complications indicated by difficulty of breathing, cough, and hoarseness, must always cause anxiety.

From the ninth to the twelfth days are those of most dangerous period. From the ninth to the twelfth days are those of most danger. Convulsions are rare during small-pox. Among children of European soldiers in India small-pox is very uncommon, because of the great precautions which are taken in the matter of vaccination. As to the mortality which ensues among the unvaccinated, the reader is referred to the chapter upon vaccination.

Isolation and disinfection, as described on a former page, must be rigorously carried out. Ventilation and a cool surrounding atmosphere, though without cold or draughts, are matters of importance. The bed-clothing should be light; by heaping on clothes, considerable harm may be done. In this, as in all other fevers, sponging the surface has a soothing effect. There need be no dread that by doing so the eruption will be "driven in." Water may be freely allowed, as also may the fever drinks (63), or lime juice and water (60). The diet should at first consist of milk and arrowroot, gruel, bread and milk, and a little beef-tea. The vital powers must never be allowed to flag, for the exhausting stage of suppuration has yet to be encountered. Under such simple management alone most cases of distinct small-pox will proceed satisfactorily; but in the confluent variety, strong beef-tea, and milk with the yolk of egg, will have to be given from an early stage. And should signs of vital depression manifest themselves, it will be necessary to give wine or brandy with a liberal

Never allow powers to flag.

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CHAP. XXIV. hand. Against the danger of great prostration, which sometimes supervenes with suddenness, "the greatest care and watchfulness are required; and if at any time the pulse becomes quicker and feebler, the surface pallid, and the pustules assume a flabby, half-empty appearance, if at the same time there be increased restlessness and delirium, then we must push our aleoholic remedies with increased vigour" (Tanner), as well as when typhoid symptoms (p. 192 note) supervene.

Stimulants. The eyes should always be carefully looked to, lest they become damaged. Careful ablution with an eye lotion (23), and the application of simple ointment to the edges of the lids if they stick together, will generally be sufficient to effect this object.

Medicines. Do not purge the patient, though by all means see that moderate action of the bowels is established by mild medicines (48, 50) at the commencement of the case. The ordinary fever mixture (38) may be given during the primary fever, but need not be continued during the second stage, when the febrile heat is moderate. In the third stage, or that of secondary fever, benefit will be obtained from a stimulant mixture (64 or 65); but prevention of irritability of the bowels then claims most attention from medicines. Prescription No. 31 will probably be found the most beneficial in such a necessity, particularly if there be, at the same time, delirium; otherwise a simple astringent such as No. 29 will answer the purpose.

Convalescence.

Convalescence from small-pox is not usually a prolonged process. Once the patient has completely passed through the disease, recovery is steadily progressive; but it will be well in most cases to administer a tonic (66, 68, or 69).

For the prevention of pitting a great many nostrums have been proposed. Equal parts of olive oil and lime water, well shaken together into a thick pitting. Prevention of emulsion, and smeared twice daily over the surface, certainly proves to some extent beneficial, but the local application of turpentine or carbolic acid is much more effectual; both, however, especially the latter, are not without danger if extensively applied, in that they may be absorbed into the system, and produce untoward symptoms. If the application be restricted to the face and hands only, no such danger need be apprehended. The manner of using them is as follows:—Turpentine one part, olive oil four parts, shaken together, and applied night and morning by means of a feather; or carbolic acid twenty minimi, glycerine one drachm and a half, and zinc ointment six drachms, mixed thoroughly together, are to be painted over the face and hands every second day.

The complications which may arise from small-pox are inflammation of the ear, boils, inflammation of the lungs, bronchitis, and ophthalmia, which, when they occur, are to be treated as if they had arisen under ordinary circumstances.

*Modified Small-pox* is a name applied to the disease as it occurs in a person who has previously been vaccinated. In such a case the whole course of the disease is so modified as to convert it into a trivial complaint, requiring no treatment; but the important point to know is that it is as infectious, and as capable of propagating the worst kind of small-pox, as is the most malignant form of that disease. The proper powers. As dangerous as any as to infecting

## CHAPTER XXV.

### ERUPTIVE FEVERS.

#### (4) CHICKEN-POX.

CHAP. XXV. Nature. THIS is a trivial though infectious complaint, which appears three or four days after exposure to infection. It is very common in India, where its attacks are by no means confined to childhood.

Symptoms. For about twenty-four hours there is more or less fever, seldom much, and indisposition. Then the rash appears, and with it the fever almost goes away. The rash commences as a number of little red pimples, which on the second day begin to fill with fluid. On the third or fourth day they have attained their maximum of size, and present an appearance as though the patient had been subjected to a shower of boiling water, which had left behind a number of small almost clear blisters. On the fifth day the vesicles burst and the contents form hard crusts. On the eighth or ninth day the crusts commence to fall off; and the disease has come to an end, leaving the patient but little the worse for it.

Sometimes successive crops of vesicles appear every twenty-four hours, and may go on forming for ten or twelve days; but this is more common when the affection attacks the adult.

The illness usually occurs only once in the same individual, most commonly during childhood; but it conveys no protection from small-pox. CHAP. XXV.

The very slight fever, and the large rounded clear vesicles, with only watery contents, distinguish it from small-pox (p. 214). Distinction.

Recollecting that the complaint is contagious, it is Treatment as well to isolate a child so attacked. Little or no actual treatment is necessary. The patient should be kept within doors for a few days, abstain from animal food, and take a gentle purgative once or twice.

#### (5) DENGUE.

In children, this fever comes on with little warning. There may perhaps be some little malaise for a day previously. This is followed by acute pain in one or two joints, and chills and flushings for a few hours, which symptoms are succeeded by violent fever (104° Symptoms. to 105°) of some twenty-four hours' or longer duration, the pains in the joints increasing in number and intensity all the while. The younger the child the fewer the warnings: in a great many cases the accession of violent fever is the first symptom. The fever is accompanied by a peculiar mottled red rash First rash. or efflorescence on the palms of the hands, soles of the feet, neck, and cheeks, extending to the chest and trunk, and not infrequently there is some soreness of the throat. With the total decline of the fever (on the second day of its duration) this rash disappears. For a succeeding period of about forty-eight hours the child is comparatively free from pains, and completely so from fever. There is nothing more than weakness left behind; but the affection has not yet run its

CHAP. XXV.  
Second eruption.

course. A second eruption, which exactly resembles that of measles, now succeeds, and with it a slight amount of fever and restlessness; all of which symptoms last for about twenty-four hours, frequently less. The after-pains, so common in the adult, seldom cause much trouble to infants and young children. Recovery is rapid, and no prolonged ill effects remain.

Distinction.

The recognition of the complaint is easy. In the first place it only occurs in epidemics, never as isolated cases. The primary eruption is like that of scarlatina, but the rarity of scarlatina in India, and the fact that the fever and eruption appear almost simultaneously, are sufficient to prevent confusion. The secondary eruption is very similar to that of measles, but the previous occurrence of another form of eruption, and the cessation of the fever temporarily, are quite sufficient distinctions.

Prospects.

The prospects are almost always favourable. The only danger is from the great and sudden heat of the first twenty-four hours, when infants are liable to convulsions.

Treatment.

Dengue is an affection which, like the other eruptive fevers, must run its course. Drugs, therefore, cannot cut it short. Upon proper management, rather than medicines, we must rely. In the first instance it will be desirable to give a mild aperient (48, 50, 52, 53). During the febrile stages a fever mixture (36, 38) should be given. The important point in the case of young children is to moderate the bodily heat by means of spongings, the cold bath, antipyrin, or oil inunction, as the symptoms may demand, in the manner directed elsewhere.

## CHAPTER XXVI.

### OTHER FEVERS.

#### (a) RHEUMATIC FEVER.

THIS disease commences rather suddenly, with a <sup>CHAP. XXVI.</sup> ~~feeling of coldness, and there is thirst, feverishness, and loss of appetite. The temperature will be found 102° and course.~~ <sup>Symptoms</sup> Pain is experienced in some of the middle-sized joints—the knee, ankle, wrist, or elbow, for instance—and it shifts from one joint to another. All these symptoms become aggravated, and with the fever there is a copious sour-smelling perspiration. The temperature runs up to 104° or 105° or even higher, in proportion to the severity of the joint-affection; the joints swell and become very tender to the touch. A case may last for some weeks. Relapses are common.

Rheumatic fever is not so serious in itself as in the <sup>Seriousness.</sup> after-mischief which is so frequently entailed by heart disease, of which it is by far the commonest cause. The immediate prospect is favourable, but a child who has once suffered is particularly liable to a second attack; and the younger the patient the more will the joints be spared and the heart attacked.

It requires skill to detect the fact of the heart having been attacked; for usually there is neither

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CHAP. XXVI. pain, tenderness, nor other prominent symptom ; but almost always the child bears the appearance of distress which cannot be otherwise accounted for.

Treatment.

This is one of those diseases in which good nursing is invaluable. The nurse should be strong enough to lift the patient with facility ; and the patient, clothed in a long flannel night-gown cut down the front and furnished with strings, should lie upon a narrow bed, well padded with blankets beneath, and he should be covered with a blanket or blankets, according to the season. Perfect rest and absolute confinement to bed are essential. The affected joints having been sponged with warm water, in which some carbonate of soda has been dissolved, should be wrapped in cotton wool and supported by pillows in comfortable positions. Now we have to endeavour to counteract the poison in the blood, which is occasioning the joint inflammations and endangering the heart. To do this we open the bowels gently, and then begin to administer the salicylate of soda in doses of ten grains every third or fourth hour (in water) to a child of five years, while stimulants are given in moderation as soon as any depression is observed. In this way the urgency of the symptoms will soon be mitigated, but it is better in any case not to continue this drug for more than a couple of days, as it is depressing. We may then substitute the bicarbonate of soda in similar doses. When the disease has been subdued a steel and quinine tonic (68) should be given. Pain is to be relieved by Dover's powder or laudanum in appropriate doses (p. 188). The diet should consist chiefly of milk, and not till convalescence has well advanced should

meat be allowed, nor should there be any hurry in CHAP. XXVI. permitting the patient to rise from bed, the danger of a relapse during the first week being considerable.

Frequently as it happens in the adult, an extremely high degree of fever in this disease is fortunately rare with children, and when it does occur the means for subduing bodily heat already recommended (*see "Fever"*) are to be put into practice without hesitation.

(b) CEREBRO-SPINAL FEVER.

This is a fever of a very distinct type and formidable nature. Within the last few years I have met with some cases of it in practice, and therefore mention it. Its chief characteristics are the suddenness of attack, the slightness of the fever, and the expenditure of all its force upon the nervous system. There are seldom any premonitory symptoms in the child. Possibly he may have gone to bed comparatively well and then got a convulsion; or there may have been some vomiting, torpor, and complaint of pain in the back of the head and neck, previously. Insensibility or delirium rapidly succeed, the head is drawn back and is more or less stiff in that position, the pupils are contracted at first, and the limbs may after a time become more or less rigid. The breathing is sighing and irregular. When the temperature is taken it will be found to be only about  $101^{\circ}$  or  $102^{\circ}$ , if so much, but as time passes it will rise. In some cases, indeed, there is almost no fever. About the third day a blotchy eruption is often noticed on the body. The danger is that the insensibility may increase and the child pass into collapse.

CHAP. XXVI.

Duration.

The disease observes no special duration. A mild case may terminate favourably in one or two weeks. A severe case may end fatally very rapidly, and cases of medium severity may last from two to four weeks. The first three or four days are the most dangerous.

Treatment.

The cardinal points appear to me to be (1) to avoid the use of quinine, (2) to push sedatives, and (3) to nourish and stimulate from the commencement, while (4) the attention is not to be diverted from the temperature, which should be kept in check by cold baths and the other means enumerated (p. 163), and (5) the bowels are to be relaxed from the beginning to the end.

The combination of chloral and bromide of potassium (8) is the best sedative to use, and it is a matter of vital importance that the nervous irritation be thereby completely controlled. The brandy and egg mixture (receipt 10) will form an excellent stimulant, unless the child be very young, when white wine whey may be substituted (receipt 8). A stimulating enema (45) is a good commencement of treatment, and it may even be allowable to apply diluted mustard plasters to the back of the neck and other parts of the body till reaction is initiated. Pancreatised milk (receipt 9) forms an excellent food, but strong meat essences and the juice of raw meat (receipt 6) must also be employed, as well as such light and digestible articles, suitable to age, as the child can be induced to swallow. As a purgative, prescription 56 will answer. The freest ventilation, a cool atmosphere, a darkened room, and perfect quietness are other essentials of treatment.

*DIVISION II.—AFFECTIONS OF THE MOUTH.*

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CHAPTER XXVII.

THRUSH.

THRUSH is one of those affections of early infancy CHAP. XXVII. (rare after the third month, except during the first Definition. dentition) which ought never to occur, and which will not occur in a well-managed infant. It is a disease of mismanagement, which is characterised by little white patches within the mouth. In itself it is a trivial complaint, though it is indicative of a depraved state of the digestive organs, unfavourable to assimilation.

The chief cause of thrush is an unsuitable diet, which, Causes and nature. producing a disordered state of the system, originates an unhealthy condition of the mucous membrane of the mouth, and renders it a fitting soil for the lodgment and growth of a peculiar vegetable parasite. The parasite thus suitably planted, there develops and causes spots of inflammation which present the appearances known as "thrush."

A dirty, sour state of the feeding-bottle or its nipple will also nourish the plant, which may thus become lodged in the child's mouth.

CHAP. XXVII. The affection is particularly common in the hot weather, which favours the growth of the plant.

Symptoms.

At first there is merely redness and some tenderness inside the mouth, which if carefully examined will show numerous very minute transparent blebs. These (spots of lodgment of the parasite) inflame, burst, and form white specks, each perhaps only the size of the head of a pin, with a very narrow red surrounding. The interior of the mouth now becomes angry-looking. It is at this stage that the affection usually for the first time attracts the attention of the mother or nurse. The size of the patches next slightly increase, presenting an appearance as though minute portions of curd adhered to the inside of the cheek or lips; but it will be found that they cannot be moved about as could mere particles of food; nor can they be dislodged without some slight force, and if removed, they leave behind little ulcers, which bleed slightly.

Situation.

Near the corners of the mouth, the inside of the lips, and the under surface of the tongue are the most frequent situations; but the spots may extend over the roof and back of the mouth, even to the tonsils and throat.

Diarrhoea.

Almost always there is some watery diarrhoea accompanying this state, which not infrequently, on account of its irritating nature, excoriates the buttocks.

Occurs only in children who are out of health.

The affection seldom occurs in a child who has not for some time previously been out of health. The healthy mouth will not nourish the seed even if introduced, the soil being unsuitable. Acidity of the stomach and bowels is usually present, the child has not been thriving, and it is thin.

Thorough cleanliness is the first essential. After CHAP. XXVII. each meal the mouth should be washed out with a Treatment. little warm water. The bowels should be regulated General. by a few doses of the red mixture (49); but if there is much diarrhoea it may be necessary to give an astringent (29). To the milk, lime water should be liberally added. A minimum of sugar should be allowed. The child must be fed frequently, because the efforts at sucking may be so painful as to interfere with nutrition, and after each meal his mouth should be swabbed out with a piece of soft rag moistened with warm water.

The next thing to be done is to destroy the parasite. Local. This is easily accomplished by the application of Destroy the borax and glycerine (15) within the mouth after each parasite. swabbing. If glycerine be not obtainable, honey may be used, but it is not nearly so useful. Another capital application is the hyposulphite of soda (one drachm to one ounce of water), which very quickly destroys the vegetation, but it may not always be easy to obtain the drug.

When the mouth is extensively affected, particu- When the larly if the throat be involved, it will be desirable throat is involved. to give a mixture of chlorate of potash (2).

## CHAPTER XXVIII.

### INFLAMMATION OF THE MOUTH.

CHAP. XXVIII. INFLAMMATION of the mouth is of three kinds—  
simple, severe, and dangerous.

1 Simple. 1. SIMPLE INFLAMMATION OF THE MOUTH.—This  
Nature, &c. is a trivial affection, engaging only the mucous mem-  
brane, and it in many respects resembles thrush in  
Different from appearanee; but it is a different disease, and does  
Thrush. not depend upon the presence of a parasite. While  
thrush is exclusively an affection of early infancy,  
this inflammation never occurs at that period of life.  
It is most common between the ages of one and five  
years.

Cause. Its cause lies in a state of constitutional debility  
accompanied by disorder of the stomach. Sometimes  
it follows measles, when it not infrequently assumes  
some of the characters of diphtheria, and then of  
course it becomes a serious affair.

Symptoms. The child is out of sorts; he is peevish, and he  
suffers from offensive diarrhoea for two or three days.  
The mouth then becomes sore, red, and hot. On  
inspection numerous spots of a dirty white colour  
surrounded by a red margin are observed within the  
cheek, upon the tongue and throat. These spots soon  
burst and form ulcers. Feeding is painful. Saliva

dribbles freely from the mouth. As one crop of ulcers CHAP. XXVIII. heal, another comes on, and thus, if unchecked by remedies, the affection may run a prolonged course.

Attention to the cleanliness of the mouth, regulation Treatment. of the diet (p. 92) and of the bowels, by the red mixture (49), and the use of an alum gargle (half a drachm to six ounces of water), will usually effect a ready cure; or borax may be used (15) instead of the alum. Should any ulcer become large, it is well to touch it rapidly and gently with caustic, but this should not be repeated without an interval of two or three days. A vegetable tonic, such as chiretta (69), or quinine (66), should be given during and after convalescence.

2. SERIOUS INFLAMMATION OF THE MOUTH.—2. Serious. Attacks chiefly the gums. It usually occurs in Attacks the gums. children who are debilitated, and who at the same time occupy close, unhealthy rooms, and obtain inappropriate, bad, or insufficient food. Among the natives it is common enough, and sometimes it is seen in neglected European children—not that the occurrence is absolute proof of neglect, though certainly strongly presumptive of it.

On examining the mouth the affected portion of Symptoms. gum is seen to be swollen and of a dark violet-red colour. It is covered with a soft greyish deposit, which admits of easy removal, and the part bleeds easily. The amount of constitutional derangement Not commensurate with seriousness. which precedes this state of the gum is very variable, but as a rule it is not proportionate to the gravity of the case, or greater than that which ushers in the simple variety of mouth inflammation. Indeed, not

**CHAP. XXVIII.** infrequently the first thing that attracts attention is the offensively smelling breath and some swelling of the upper lip, which leads to the discovery of the state of the gum. At the same time the glands under the jaw at the affected side are apt to become sore and enlarged. The cheek next swells and becomes boggy to the feel ; the impression of the teeth on the inside being retained. Soon afterwards ulceration of the gum commences at the base of the teeth, from which point it proceeds with variable rapidity. Very fœtid saliva, streaked with blood, flows from the mouth. Those portions of the cheek which come into contact with the diseased gum may ulcerate to a small extent. If the ulceration of the gum is extensive, the teeth will loosen, and even fall out. When the ulceration has ceased to spread, recovery is initiated ; the swelling diminishes, the surface of the sore becomes clean, the flow of saliva diminishes, and the deposit on the gum lessens till it finally disappears.

**Prospects.**

As a rule cases properly treated recover, and the patient is convalescent at the end of a week or ten days.

**Treatment.**

The utmost cleanliness of the parts must be observed. The mouth should be constantly washed out with warm water and salt, or with a weak solution of Condyl's fluid (one drachm to eight ounces of water).

**Local.**

The diet should consist of beef-tea, milk, raw egg and milk, pounded meat, and such like nutritious articles as the child can be induced to take, avoiding sweets and much farinaceous food. The brandy and egg mixture (*see receipt 10*) is always likely to do good. The bowels should be carefully regulated, neither constipation nor diarrhoea being permitted (49).

**Diet.**

**Bowels.**

From the commencement the chlorate of potash mixture (2) should be given and persisted in till recovery has been completely established. This medicine is most valuable in these cases, and if not at hand at the moment, should be procured in the crystalline form, by post, with as little delay as possible.

During convalescence a tonic (such as 68, 71) should be given till the strength is completely recovered, and it will be well to allow the child a little claret and water with its meals.

3. DANGEROUS INFLAMMATION OF THE MOUTH affects the cheek. This most formidable kind of inflammation and mortification of the cheek is known under the name of *cancrum oris*. It only attacks those who are in a very bad state of health and suffering from debility, and is most common between the ages of two and five years. Among poverty-stricken and half-starved native children it is comparatively common as a sequence of the ordinary malarial fevers of the country. Sometimes it occurs in unhealthy children after measles. Dirty poverty and foul air will do much in such cases to initiate this calamity. European children sometimes suffer from it after very debilitating diseases.

There is very little general illness to indicate what is coming. There is, moreover, very little, if any, local pain. The first thing observed will probably be a swollen, shiny cheek; "it looks as if the surface had been besmeared with oil, and in the centre of the swollen part there is generally a spot of a brighter red colour than that around" (West). The cheek feels

CHAP. XXVIII.  
Chlorate of  
potash a  
specific.

3. Dangerous,  
or "cancrum  
oris."  
Class at-  
tacked.

Symptom.  
Come on  
mildly.

CHAP. XXVIII. hard. The breath is very fetid, offensive saliva flows profusely, the glands under the jaw swell, the gums become spongy, and perhaps the teeth may loosen.

The ulcer.

Great constitutional sympathy.

Portion of cheek dies.

Prospects.

Recovery the exception.

Treatment.

Diet and stimulation.

Inside the mouth, opposite the red external spot, an ulcer will be detected—a dirty, ash-coloured, irregular sore. This ulcer increases in size, the red spot on the cheek becomes black, and the stench is great. High fever, much general disturbance, and prostration accompany the progress of the mortification, but there is no considerable local pain.

Beyond the blackness will be observed a ring of bright redness. The black portion now begins to separate at the edges, till finally becoming detached, it leaves a hole through the cheek, opening into the cavity of the mouth—if the child has lived so long.

The disease is of a most dangerous nature; recovery is the exception. Should the patient survive the ordeal, very great deformity is sure to result; but after the complete restoration of the general health, operative surgery may be able to accomplish much in remedying this.

In the absence of a physician the best thing that can be done is to support the patient's strength by every means in the power. From the earliest moment jugged soups, the juice of raw meat (receipt 6), egg beaten up with brandy, and such highly-concentrated nutriment, must be given with a liberal hand and at short intervals. One of the preparations of fluid beef, if procurable, will prove a valuable auxiliary. Night and day nutrition and stimulation are to be administered at intervals of an hour, except during actual sleep, which unfortunately is of rare occur-

rence. Emphatically life cannot be saved without CHAP. XXVIII.  
energy and perseverance in this matter.

The parts should be repeatedly washed with some Local.  
non-poisonous fluid, such as salt and water, or Condy's  
fluid properly diluted (p. 230). A small light poultice,  
made chiefly of pounded charcoal, will mitigate the  
stench.

When there is a tendency to delirium, total inability Opium.  
to sleep, and great restlessness, much benefit will be  
derived from a timely dose of opium (one drop of  
laudanum for every year of age completed); but  
caution must be observed not to produce depression  
by the use of this drug.

Should recovery eventuate, a tonic of steel and <sup>After reco-</sup>  
quinine (68) will prove valuable. Considerable <sup>very.</sup>  
deformity is sure to be left; but when the child's  
health has been entirely re-established, after the  
lapse of some months, the surgeon may be able to  
do much to remedy it.

*DIVISION III.—AFFECTIONS OF THE THROAT.*

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CHAPTER XXIX.

(1) QUINSY, OR TONSILLITIS.

CHAP. XXIX. THIS is the ordinary inflammatory sore throat. It is an unusual complaint in children under ten, and it is rare under five years of age.

Age of occurrence. Cause. It is commonly caused by cold, but insanitary surroundings are sometimes responsible. By some it is believed to be infectious.

Symptoms. Slight chilliness succeeded by fever ushers in this complaint. Soon some soreness of the throat is complained of, the tongue is very furred, and the face is flushed. Swallowing is difficult and painful. Upon inspecting the back of the mouth, the tonsils will be seen swollen and red. After thirty-six or forty-eight hours, most probably the disease will resolve itself. Sometimes, though seldom in the child, an abscess may form in the tonsil, and then, of course, the distress will be great and prolonged till it has burst.

Deafness may sometimes be a symptom, but it is of no importance, being due simply to the swollen

tonsils, temporarily blocking up the little ear tubes from the mouth.

Difficulty of breathing is a possible but rare occurrence when an abscess is forming ; though indeed it may happen without any suppuration being present. The symptom is one which need not give anxiety ; the child will not suffocate, even though an abscess should form.

There is never any danger. Repeated attacks may Prospects. bring on chronic enlargement of the tonsils, and its attendant evils.

The treatment need only be of the simplest kind. Treatment. Rest in bed, light diet, cooling drinks, and a brisk saline purgative (one drachm of Epsom salts in some water). The inhalation of steam from over a jug, fomentations followed by poultices to the throat, which should afterwards be wrapped in cotton wool, and after twelve hours, swabbing the throat out with a solution of nitrate of silver (10 grains to one ounce of distilled or rain water), will effect a ready cure.

In the rare case of an abscess forming, if surgical assistance cannot be obtained, it must be left to burst. No attempt should be made by an amateur to open it.

## (2) CHRONIC ENLARGEMENT OF THE TONSILS.

The important point to know about quinsy, is Causes. the possibility of chronic enlargement of the tonsils resulting from repeated attacks, and the constitutional effects of such cnlargement. But, unfortunately, chronic enlargement occurs sometimes in children who have never had quinsy, an unhealthy constitution being apparently sufficient cause in these cases.

CHAP. XXIX.

Symptoms.

The tonsils will be found projecting so far as to touch or nearly to touch each other, thus partly obstructing the entrance of the air into the windpipe. As a result, the child snores loudly during sleep, the voice is thick, and there may be partial deafness. Almost always there is chronic cough, caused by the irritation; sometimes there may be actual difficulty of breathing.

Effects.

Children so affected do not thrive. The narrowed orifice sufficiently impedes swallowing, even though there be no pain, to prevent the consumption of sufficient nutriment; consequently we have emaciation. The difficulty of breathing prevents the full expansion of the chest, and the result is flattening, which remains permanent throughout life. Even should the condition be subsequently remedied, it is not always that the articulation becomes natural, or that the hearing will be as acute as it otherwise would have been.

Treatment.

This condition calls for special attention to all matters connected with the hygiene of the child. A life in the open air and an abundance of animal food are essentials. Cod liver oil and iron (71) should be administered persistently. Each day the tonsils should be freely brushed over with a solution of nitrate of silver (20 grains to 1 ounce of rain or distilled water), or pure tincture of iodine. The enlargements will frequently, under this treatment, subside. But should they remain, or continue to increase, the child should be sent to a surgeon, who will remove the tonsils in whole or in part by a comparatively simple operation.

## CHAPTER XXX.

### (3) CROUP.

THIS is a disease of the throat either wholly spasmodic, or partly spasmodic and partly inflammatory CHAP. XXX. Varieties. in its nature.

Upon the absence or presence of inflammation will depend the absence or presence of serious symptoms, and the intensity of the accompanying fever. For practical purposes, therefore, it is important to classify the disease into (a) spasmodic croup; (b) inflammatory croup.

1. SPASMODIC CROUP is a comparatively mild complaint. It may commence either with symptoms of a slight cold, cough, and perhaps slight fever, or it may be ushered in at once without any introductory symptoms, by a sudden attack of difficulty of breathing.

Usually, however, there is a hoarse cough, some general indisposition, a foul tongue, and a quick pulse. The respiration soon becomes crowing—that is, at each endeavour to draw air in through the spasmodically narrowed orifice of the throat a peculiar sound is produced—a sign which is unmistakable. An attack of difficulty of breathing follows; it occurs as a sudden paroxysm, usually at

CHAP. XXX.

Cause.

Treatment.

night, and it may last for an hour or longer. After the attack the child is tolerably well, the voice perhaps remaining a little hoarse, but that is all. A similar attack may occur on the following night, if not sooner. Throughout, the fever, if present at all, is but slight; and it subsides after the attack, leaving the child comparatively well and able to run about, free from all throat symptoms. Of the cause of this complaint we know nothing more than that cold is sufficient to induce it in those who are predisposed. An emetic of ipecacuanha wine (40) had better be given as soon as the case comes under observation. Steam should be inhaled, an alterative purgative (56) administered, and the child, when the paroxysm commences, should be put into a warm bath. A dose of mixture No. 7 is often very useful at this stage. After an hour the emetic may be repeated if needful, as also may the bath. The air of the room should be rendered warm and damp (by putting water in a kettle, whose spout projects into the room, on the fire), but not overheated: as a rule, the room is made much too hot. Fomentations to the throat in the shape of a sponge wrung out of hot water and applied, will also prove useful. A dose of chloral (8) should be given, and the paroxysm having passed, the bromide of potassium mixture (9) commenced, and continued steadily for two days or so after the complete recovery of the child. Non-exposure to cold, and careful regulation of the diet and bowels, are points demanding special attention for some time following.

Upon the reappearance of any acute symptoms, a few drops of ipecacuanha wine should be given

every hour, so as to produce and perpetuate nausea, CHAP XXX.  
till they subside.

There is a form of spasm of the throat called Child-crowing. CHILD-CROWING, which is most frequently met with during teething between the ages of six and nine months, but sometimes later. It is more frequent among hand-fed children than others, and among the weakly than the strong. A drooping infant on waking from sleep, when sucking or crying, makes a strange crowing sound, at first not very loud. After a time this increases to paroxysms of difficulty of breathing, which may be so severe as to produce lividity of the face. At the end of a few moments, however, the spasm yields, air is drawn in through the narrowed chink with a shrill crowing sound, and the paroxysm is over. But it recurs again and again at intervals, of perhaps a few hours, perhaps not for days. Sleep usually succeeds an attack, after which the infant is apparently as well as ever till a recurrence happens. The affection is not accompanied by any fever unless there be any other disease present.

This affection is more of the nature of a convulsion Causes. of the throat than anything else. It is particularly common during teething, which often causes it; over-feeding and constipation predispose to it. A condition of health below par is, however, a necessary preliminary, and rickety children are peculiarly liable to it.

These cases usually do well, but if the attacks Prospects. increase in frequency and severity they may wear a child out, till exhaustion and general convulsions ensue, and lead to a fatal termination in a small number of cases.

During an attack we should proceed as when Treatment.

CHAP. XXX. — restoring a stillborn child, by slapping it, dashing cold water upon it, exposing it to a cold current of air, pulling the tongue forward, and, if necessary, employing artificial respiration (p. 32). The warm bath should always be used, and a sponge wrung out of hot water may be applied to the throat under the chin, while smelling salts is held for a moment at intervals to the nostrils. In the intervals between attacks we should endeavour to remove the cause by lancing any pressing tooth, and by attending to the diet and nursing, as laid down in Chapters V. and IX. The bowels should be kept moderately loose (*see Constipation*). Cold water bathing twice or three times a day is a means of prevention which, it is said, few cases will resist. Bromide of potassium (9) should be used when an attack threatens, or till the excitement following it has subsided, and its administration may be preceded by one or two doses of chloral (8). Tonics are very essential, and of these the iodide of iron and cod-liver oil (71) is the best form of exhibition, but of course the active symptoms must first have been controlled. The child should, contrary to the general idea, be kept in a cool atmosphere.

2. Inflammatory.

INFLAMMATORY CROUP is a serious affection. By many great authorities it is believed to be the same disease as diphtheria, only expressing itself differently by spasmodic symptoms because a lower part of the throat is affected. However this may be, it is quite certain that this form of croup is sometimes capable of infecting the healthy with diphtheria, and *vice versa*.

Nature.

It consists of an acute inflammation of the mucous membrane lining the top of the windpipe. As a

Relation to diphtheria.

result of the inflammation, swelling, and the exudation of a white incrustation or "false membrane" ensue, which so block up the narrow air aperture as almost or altogether to close it. At the same time spasms of the throat occur at intervals, producing paroxysms of cramp and difficulty of breathing.

At first there are all the symptoms of a common cold, with fever, thirst, drowsiness, and running at the nose. The child complains of his throat, at which he clutches when swallowing. Hoarseness comes on, to which after a time is added the rough ringing cough. The fever increases, and these symptoms continue for some twenty-four or thirty-six hours. At night an attack of difficulty of breathing causes the child to awake in a fright, gasping for breath. The paroxysm passes, and during the rest of the night the metallic cough, crowing, and impeded respiration continue; leaving the child exhausted in the morning, restless, flushed, the voice almost extinct. A slight improvement succeeds, and a little sleep may be obtained, but the amendment is only temporary. As the day goes on the force of the fever again increases, and the paroxysm returns with greater violence than before. Perhaps the face may become livid, and the natural tint may not even be recovered between the paroxysms. If the flesh between the ribs becomes depressed at each respiration we may be sure that little air is entering the lungs. Cold, clammy sweats, a rapid, weak pulse, drowsiness, and lividity of the face, indicate a fatal termination.

This kind of croup is always serious; but so long as the symptoms last mentioned are absent the case may be regarded hopefully.

CHAP. XXX. It may be known from the spasmody variety by Distinction. the preliminary fever, the hoarseness, the feeble or extinct voice, the continuousness of the fever, the increasing difficulty of breathing, and chiefly by the fact that the croupal sound continues during the intervals between the paroxysms.

Treatment.  
Bath and inunction.

Moist air.

Emetic.

Bowels.

Fomentations and inhalations.

Keep up nausea.

As soon as it is suspected that a child has croup he should be placed in a warm bath for a quarter of an hour, the whole skin should be rubbed with oil, and he should then be put to bed in a room the air of which is warm and moist. By attaching a tube to the spout of a kettle which is kept boiling on the fire, the steam will be led into the room, and if the tube be long enough it may be led close to the child underneath a blanket tent (one side of which is left open), constructed over the bed. An emetic (39, 40) should now be given, or if the symptoms have been urgent, it ought to have been the first thing done. The bowels, which are usually costive, should be acted upon after the emetic by a brisk purgative (56). A large sponge wrung out of hot water should be applied to the throat and alternated with another till the skin becomes red and irritated, and afterwards the part should be wrapped in cotton wool. The inhalation of steam is soothing, and therefore useful; and it is a good plan to add about twenty drops of carbolic acid to the hot water of each inhalation.

After some four hours or so it is well to repeat the emetic, and in the meantime the child should have been kept slightly nauseated by means of ipecacuanha (five drops or less of the wine each hour upon a lump of sugar will answer), or by the frequent use of mixture No. 36.

Troublesome cough at this stage is frequently much relieved by poulticing the chest effectually before and behind.

CHAP. XXX.

Poultice  
chest.

Very frequently the above measures or a repetition of them will cut short an attack of croup. But should the case still continue to proceed badly the mixture is to be omitted, and an alterative and antispasmodic substituted in the form of mixture No. 1, of which one teaspoonful should be given every second hour night and day.

These means  
usually suffi-  
cient.If not pre-  
scribe No. 1.

The diet at first should be very light, and consist chiefly of slops; but as we omit the depressing medicines a more liberal allowance must be given, pretty rapid advance being made so as to anticipate the accession of constitutional depression. Beef tea and wine ought to be given upon the slightest appearance of typhoid symptoms (p. 192 note).

Sometimes croup demands the performance of an operation to save a child's life. Should a surgeon propose to do so, the mother ought not to oppose his advice. No surgeon will lightly undertake a task of such responsibility, and one which is not calculated, in these cases, to prove largely successful. A mother's plea for a little more delay may remove even this chance of escape.

## CHAPTER XXXI.

### (4) DIPHTHERIA.

**CHAP. XXXI.** **—** **Definition.** THIS formidable disease is characterised by inflammation of, and exudation upon, the back of the mouth and throat. The whole constitution suffers under great prostration; and after recovery, paralysis or other nervous phenomena are not uncommon.

**Infectious-ness.** It is highly contagious, and usually prevails epidemically. A child cannot be deemed altogether free from infection till a month has elapsed since complete recovery. After exposure to infection, the disease may commence within thirty-six hours or even less, but more usually five or six days elapse. A week's freedom from symptoms, after exposure, may be regarded as evidence that infection has not been incurred.

**Modes of spreading.** Diphtheria is usually disseminated through direct infection. The germs are given off chiefly from the throat with the breath or expectoration, but in severe cases the membrane lining the intestine also becomes affected. Hence the affection may be spread, through the influence of gas from privies into which the excreta have been thrown, if they have not previously been disinfected (p. 138); or through the air in the immediate vicinity of the patient, or by his foul linen; as well as by direct implantation, such as may occur by

the act of kissing, or by transferring a feeding-bottle CHAP. XXXI.— from an infected to a healthy child.

“On one occasion, when called to investigate a case at a detached and perfectly isolated house in the country, I,” writes Dr. Thursfield, “found that the patient had been to a neighbouring town, and had entered and been exposed to sewer gas in a house on a short line of sewer, which I knew had become specifically contaminated by diphtheria. The owner of the property instructed a surveyor, residing some little distance off, to examine this sewer. He did so, and for that purpose had it opened, and was much exposed to the gas, and the second or third day after I received information that he was struck down with an attack of diphtheria, from which and from its remote sequelæ he suffered severely.”—(*Lancet*, August, 1878.)

Milk which has been kept in a house infected with diphtheria is another mode of spreading the disease.

The infection is portable. A visitor may convey it from house to house.

It will thus be seen that, although the modes of dissemination are numerous and subtle, they are all capable of being controlled by disinfection (pp. 129, 138); or they are easily avoided.

Even though the disease occur in its mildest form, there is always much constitutional depression, as the result of the blood-poisoning upon the nervous system.

For one or two days there is fever, lassitude, and pains in the limbs, but these symptoms need not necessarily be severe. Some soreness of throat is now noticed; the tonsils and all the back of the mouth are seen to be very red and livid, with here and there small patches of white lymph upon them. Soon all these parts become covered with a film of greyish-white substance; there is difficulty of breathing; the glands of the neck enlarge; the tongue is

CHAP. XXXI.

Tongue.

Temperature.

False mem-  
brane.Signs of recov-  
ery and of  
death.

Prospects.

Distinction.

Treatment.

Cold locally.

red at its tip and foul behind. The temperature rises to  $104^{\circ}$  or  $105^{\circ}$  by the second day, and begins to fall on the fourth day. The breath is very offensive. There is difficulty of swallowing, and the patient suffers from a constant "hawking," caused by the endeavours to get rid of the tenacious secretion. The white substance becomes greyish, dense, and shreddy; perhaps separating in places, and showing a raw, ulcerated surface beneath. There may be a good deal of nasal discharge. The general prostration is intense. At this point, either recovery begins or the child sinks. If the former, the false membrane separates, the raw surface heals, and convalescence commences. If the latter, the difficulty of breathing increases: should the membrane become detached, another rapidly forms, stupor comes on, and death ensues. Sometimes, though happily rarely, sudden death occurs from clotting of the blood at the heart, without any warning symptoms.

Diphtheria is always a dangerous affection. Scanty urine, difficult breathing, and extreme prostration are bad signs. A rise of temperature after the fifth day is ominous. Diarrhoea during the latter stages indicates danger.

Diphtheria cannot well be mistaken for croup; the absence of paroxysms of difficult breathing, and the condition of the throat as actually seen, are sufficiently distinctive.

For scarlatina it might be mistaken in its very early stages, but the absence of rash after the second day, and the throat incrustation, will be evidence enough.

The child should be put to bed in a large, well-ventilated room. He should be allowed to suck ice

freely, and a bladder containing ice or freezing mixture should be applied externally to the throat, with the object of keeping down the inflammation.

The further treatment has two objects in view—(1) Further objects. to support the patient's strength, and (2) to relieve the throat.

From the very commencement concentrated nourishment must be given; the strongest jugged beef soup, Brand's essence of meat, Johnson's fluid beef, eggs beaten up with milk, and occasionally egg and brandy should be sedulously given at short intervals. Stimulants are essential from the beginning, and they are to be given liberally. Without such feeding and stimulation no treatment can avail. If there is difficulty in accomplishing the administration of nutrition by the mouth, the substances named should be injected into the bowel, an ounce at a time, and retained there by gentle pressure.

Unless there is actual constipation it is better not to trouble the child with purgatives.

When the pulse shows signs of failing, the patient should be kept very quiet in bed, with his head low; and he should never be allowed to assume the erect posture while this state lasts, lest fainting, which might easily prove fatal, be induced.

When the breathing is becoming impeded, or when the false membrane is seen to become dense and thick, the directions as to placing the patient under a blanket tent, which is supplied with moist and heated air, as described in the last chapter, should be observed. The object now is to cause the membrane, by the aid of heat, to detach itself, cold having done what it could to check the violence of the inflammatory

The most concentrated nourishment from the beginning.

Avoid purgatives.

Position of patient.

Moist and heated air.

**CHAP. XXXI.** process, but the patient may still be allowed to suck ice. With this object, inhalations of steam frequently repeated, and the application of a warm moist sponge externally, are likely to prove beneficial. To each pint of the hot water, used for the inhalations, it is desirable to add twenty drops of carbolic acid.

Should the membrane begin to separate, these measures must be persevered in with increasing assiduity.

**Medicines and applications.** As to medicinal agents, so soon as any signs of the film or exudation become noticeable on the throat or tonsils, these parts should be thoroughly swabbed over with an application composed of equal parts of tincture of steel and glycerine; and the following mixture should be prepared with accuracy in the manner below described:

Take of chlorate of potash, 30 grains; strong hydrochloric acid, half a drachm; quinine, 12 grains; tincture of steel, 40 minims; syrup and water sufficient to complete up to 10 ounces.

Place the potash in a ten-ounce empty bottle; pour upon it the strong acid, and cork the bottle *loosely*, or cover it *lightly*. When the bottle is full of gas, as it will be in a few minutes, add the water little by little, shaking the bottle each time. Finally add the syrup, quinine, and iron.

Of this mixture give two teaspoonfuls every fourth hour to a child five years of age.

Between each dose some of the mixture should be employed as a gargle, if the child be old enough to be able to use it thus.

Should the prostration be considerable, three or four additional drops of tincture of steel may be added to each dose of the mixture.

In the event of the film or exudation showing a disposition to increase rapidly, the application of the tincture of steel and glyccrine to the throat, by means of a small portion of sponge securely tied to the end of a thin piece of whalebone, is to be repeated after the lapse of two or three hours.

By proceeding in this way the remedies are brought into actual contact with the parts at short intervals; and the medicine is rapidly introduced into the blood.

Should the case continue to advance unsatisfactorily, the respiration becoming seriously impeded, the parent, if so advised by a surgeon, should not deny the child the chances afforded by the operation of tracheotomy.

Should strong hydrochloric acid not be at hand, the mixture may be prepared in the same manner, substituting three times the amount of tincture of steel for the quantity ordered above.

The weakness of convalescence is best met with <sup>The debility of</sup> tincture of steel and cod liver oil administered <sup>convales-</sup> <sub>cence.</sub> together internally, and by change of air. A sea trip, when possible, is always advisable.

Diphtheria not infrequently is followed by paralysis <sup>Paralysis as a</sup> <sub>complication.</sub> —generally partial—involving various parts of the body. Generally this condition is recovered from, being amenable to treatment by steel, quinine, fresh air, and good food. The muscles of the palate are usually the first to be thus affected; the voice then assumes a nasal, drawling, monotonous character; fluids pass through the nose when attempts are made to drink, and the child experiences great difficulty in expectorating. The eyes are, next in order of frequency, affected; confusion of sight and giddiness

—  
CHAP. XXXI. being the chief symptoms. If the legs become affected, a trembling and uncertain gait soon discloses the fact.

The amount of paralysis which may succeed a case bears no proportion to the severity of the primary disease.

This complication may last from six weeks to a year; but, as stated, the natural tendency is towards recovery after two or three weeks.

In some cases of diphtheritic paralysis the danger of death by starvation is great, as the child cannot swallow any food, all being returned through the nostrils. Then the only hope is to feed the child through the nostril by means of a soft tube passed into the gullet and a syringe. To accomplish this satisfactorily and without danger, skilled assistance is necessary.

Diphtheria  
complicating  
measles.

As a complication of measles, a diphtheritic state of the throat may occur, sometimes simultaneously with the measles itself, more frequently as recovery from the latter is taking place. In such a case the affection should be treated in all respects as though it were a case of pure diphtheria.

## CHAPTER XXXII.

### (5) MUMPS.

THERE is a contagious affection termed mumps, which, CHAP. XXXII. though not really a disease of the throat, had better Nature. be mentioned briefly here. It is very rare in infancy, and in those under six years it is not common. The affection is an inflammation of those glands which secrete the saliva, the largest of which are situated one at either side of the face just beneath the ears. Squire says that a child remains capable of propagating the affection for two weeks after the disappearance of the disease.

Mumps seldom attacks the same person twice. Its Cause. is spread only by infection, after exposure to which perhaps a fortnight will elapse before symptoms appear.

A feverish cold and stiffness of the jaw are the Symptoms. earliest observed symptoms. Then appears a painful hard swelling in the neighbourhood of the cheeks and ears extending beneath the chin. The child is unable to open its mouth. Any motion of the jaw is painful, the face is distorted. The fever and swelling increasing, reach their maxima on about the third or fourth day; from which time all symptoms gradually diminish, till complete recovery is attained by about the eighth or tenth day.

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The swelling may occur on one side only, run its regular course, and then be succeeded by the same appearance and symptoms on the other side ; or both sides may be affected simultaneously.

Sometimes a hardness and some small amount of enlargement remain for a considerable time after recovery.

**Migration of inflammation.** A singular fact about mumps is the liability of the inflammation to leave the salivary glands, and transfer itself to the testicle of a boy or breast of a girl.

**Treatment.** Rest in bed, a brisk purgative (54, 56), fomentations, and perhaps a few doses of fever mixture (38), together with restriction to a light diet, is all the treatment that is essential during the febrile stage. Subsequently painting the hard swellings with iodine, or rubbing in the iodine ointment (27), and a short course of tonics (66, 69, 72) will complete the cure.

*DIVISION IV.—AFFECTIONS OF THE CHEST.*

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CHAPTER XXXIII.

COUGH.

COUGH is in reality but a symptom, it is not a disease CHAP. XXXIII. in itself. It is, however, such a constant and early symptom that it primarily attracts attention in cases of chest affection. Cough may imply very little or it may mean a great deal. We are familiar with the expressions, "slight cough," "bad cough," and so forth, and we understand the great differences in their signification.

No less than one-fifth of all the children under Frequency. five years of age who die in London, succumb to diseases of the organs of respiration. In India there is not the same liability to these complaints, and when they do occur they run a milder course; still there is no lack of such cases.

An ordinary COUGH AND COLD is a trivial affair, Ordinary cold. consisting of irritation of the membrane lining the nose, eyelids, and upper part of the throat. It is not necessary to occupy space by entering into a description of the symptoms of this affection, which are known to all; or to detail the simple household treatment which effects a ready cure. Prescription 46 is a suitable domestic cough medicine.

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There are two other forms of unimportant cough which must be alluded to, lest their nature be mistaken. (1) The first is the SPASMODIC COUGH, or stomach cough, as it has been called, from which children may suffer as a result of gastric or intestinal derangement. This cough is loud, barking, and hoarse; the child is in its usual health, the only thing noticed is that it suffers from occasional fits of severe coughing.

Symptoms.

None of the symptoms of an ordinary cold are present, nor yet any of the symptoms to be described further on, which indicate that the chest is affected. Upon examining the throat it will be found slightly irritable and red, and probably the uvula (or small pendulous portion of flesh) will be seen to be unusually red, elongated, and possibly slightly tumefied. It is easy to cure this kind of cough.

Treatment.

In the first place a mild aperient had better be used (48, 50), and this should be followed for some days by the use of the red mixture (49). The subsequent employment of tonics (69, 72), and the daily application of the glycerine of tannin (26) to the throat, together with proper regulation of the diet, will soon remove the local irritation which is responsible for the symptoms. (2) Children not in-

Night-cough.

frequently are affected with NIGHT-COUGH, particularly at the time of teething. It is a short, dry cough, which commences soon after the child has been put to bed, causing much annoyance and disturbing the rest.

After a couple of hours or so it ceases altogether, and the child passes the remainder of the night quietly. The general health is not much affected, though children so suffering appear to be somewhat out of health. This cough is wholly of a nervous nature, and may be removed by pursuing a course of good

Nature.

living, with a little stimulation in the shape of largely CHAP. XXXIII.  
diluted wine at dinner-time, if the child be old enough.

Tonics (69, 72, 71) should at the same time be given Treatment.  
and persisted in for some time after the symptom has  
ceased. But the chief means of securing immediate  
relief is by the aid of the bromide of potassium mixture  
(9), which should be given twice a day, either alone  
or combined with mixture No. 46.

To be able to discriminate between such unimportant complaints, and the more serious condition of INFLAMMATION OF THE CHEST, whose presence is also notified by the existence of cough, is very important.

It is not necessary here to attempt any division into bronchitis, pleurisy, inflammation of the lungs, and so forth, for the all-sufficient reason that the treatment which non-professional persons have it in their power to adopt, differs not in any of these cases, and that the difficulty of discriminating each accurately would to them be insurmountable in the majority of instances.

Chills, the result of improper exposure, are the causes. most constant causes of these attacks. Want of proper ventilation will do much as a predisposing cause. There is a special liability among those who have once suffered from a chest inflammation to a recurrence upon slight exposure. A child who once gets bronchitis is pretty sure during its childhood to suffer from a repetition of the ailment unless special precautions be adopted. Boys are more frequently attacked than girls, probably because they are more exposed. The age of a child has a great deal to say in the matter; strange though it appear, Exemption of considering their extreme delicacy, it is a fact that young infants.

CHAP. XXXIII. during the first two months of life, infants are singularly free from liability to these affections of the chest. Exposure of such young infants will tell upon the liver and bowels, and it will cause very severe "cold in the head," an affection to which they are peculiarly liable, but it will not usually cause a chest complaint. Even up to three or four months there is lessened liability, but from this age till eighteen months the susceptibility increases, again to diminish as childhood advances. At teething periods, when the nervous excitability is at its height, children are particularly liable to chest inflammation if exposed. As a consequence of measles and some other fevers, chest affections may occur, and then generally in a most insidious and dangerous form.

When from any cause there is reason to believe that the chest is affected, an examination into the points enumerated at p. 154 should be made without any undue exposure. This having been done, we proceed to consider the symptoms which notify such an occurrence.

Symptoms.

The child suffers from what is deemed to be an ordinary cold, perhaps for a day or two. But, instead of recovering, the cough becomes aggravated and distressing, the skin hot and dry, and the breathing hurried. A sucking infant will drop the nipple, cough more or less violently for a time, and make another futile attempt to suck. The heat of skin increases towards night, the breathing will probably be wheezing, and the little patient becomes restless, thirsty, and unable to sleep. As morning approaches, perhaps from sheer weariness, a little sleep is obtained; but, upon waking, the suffering from difficulty of breathing

Periods of greatest liability.

and coughing is much greater than before, owing to CHAP. XXXIII. the accumulation of secretion in the air-tubes. After prolonged and exhausting efforts, which perhaps may induce vomiting, the passages are cleared and these symptoms subside. Expectoration is seldom observed, because children swallow it as soon as it reaches the mouth (a matter of no consequence); but if there has been vomiting, the ejected substance will be seen to contain much slimy mucus. In other cases, where the tubes are not so much engaged as the substance of the lung itself, we notice at this period very high fever with a dry, catching, painful cough; a flushed face; dilated nostril; panting respiration; and an unusually bright eye. The urine is thick, the bowels constipated, the tongue coated behind and red at the tip. As time passes the face becomes heavy, pale, and of an earthy tint. Notwithstanding that the restlessness is extreme and the child tosses from side to side, there are intervals of drowsiness. If after five or six days the symptoms do not become markedly alleviated, if there is a sunken, pallid, or livid face, with increased restlessness, rapid panting, or loud wheezing, the body being hot while the hands and feet remain cold, and if occasional cold, clammy perspirations happen. the case is progressing very unfavourably.

One severe form of chest inflammation commences with a short, sharp, shivering fit, followed by intense fever, hurried respiration, a short, dry rapid cough, and vomiting. Sometimes in these cases convulsions occur at an early stage.

Chest inflammations which follow measles, &c.,

CHAP. XXXIII. frequently advancee so gradually and insidiously as to esceape detention.

Distinction from head affections.

The fever, vomiting, and headache, with which a severe chest eomplaint is introduced, may sometimes be mistaken for some affection of the head, a suspicion whieh the occurrence of a eonvulsion would be held to eonfirm. It therefore behoves us to be able to diseriminate between the two. The vomiting, restless nights, talking in the sleep, fever, and constipated bowels, may originate the miseoneeption ; but in chest affections the vomiting is short and deeisive, and nausea does not exist. In head affections nausea and irritability of the stomaeh are eonstant. The sudden rise of temperature when the lung is at fault, and the quickened breathing, uniform in its rapidity, not jerky, or only quiet by starts, are sufficiently distinctive.

From croup.

It is hardly possible in ordinary eases to eonfound chest inflammation with croup : the paroxysms of the latter, the husky voice, and the crowing respirations, ought to remove all doubt.

From whooping-cough.

Nor can the eough well be mistaken for that of whooping-cough with its eharaeteristic whoop, its intervals of eomplete relief and absence of wheezing. The presence of wheezing, either heard or felt, will distinguish bronchitis from either of the two last-named affections.

Prospects.

Obviously if both lungs are affected, the danger is greatly increased. The temperature is a good guide as to the amount of danger present ; a heat of  $104^{\circ}$  or  $105^{\circ}$ , if it continues for more than a day, is sufficient to oeeasion grave anxiety. An inflammation of the substance of the lung (pneumonia) is always a more

serious affair than inflammation of the lining of the air-tubes (bronchitis); but both conditions are frequently commingled. As an indication of seriousness, the following distinctions may therefore be noted :—

## PNEUMONIA.

1. Temperature from  $103^{\circ}$  to  $105^{\circ}$ .
2. Skin always hot and dry.
3. Tongue and lips bright red.
4. Cough dry and hard.
5. Breathing difficult and rapid, but not wheezing or rattling.
6. The affected side is dull on pereussion.

## BRONCHITIS.

1. Temperature seldom above  $102^{\circ}$ .
2. Skin frequently moist.
3. Tongue and lips natural.
4. Cough loose and moist.
5. Breathing wheezing or rattling throughout.
6. Absence of dulness.

In *bronchitis* the lining of the air-tubes is inflamed, and it Pathology. pours forth additional mucus, the air still entering to some extent, and producing in its passage the wheezing or rattling sounds. It may affect only the larger tubes, and is then not nearly so serious as when it spreads to the smaller tubes. In *pneumonia* the substance of the lung is inflamed. The lung may then become solid like a piece of flesh, when it is, of course, unable to admit any air into the affected part. When recovery is taking place this solidity breaks down or dissolves, forming a thick matter which elder children will expectorate; and when this softening occurs, we have a rattling sound.

The child, clothed in flannel, should be put to bed Treatment. the moment it is discovered that its chest is affected. An emetic of ipecacuanha (39, 40) should then be Emetic. administered. The affected side of the chest both before and behind may be enveloped in a large bran Poultices poultice.

The mixture No. 36 (to which one drachm of Medicine. antimonial wine may with advantage be added, in the case of a robust child) should at once be com-

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CHAP. XXXIII. menced, and if it produces slight nausea so much the better; but should it occasion vomiting, the dose may be reduced to one-half. It may be necessary now to adopt measures to reduce the temperature as detailed in Chapter XVI. Complete rest to the patient, and surrounding quiet, are matters of much greater consequence than usually imagined. The room had better be slightly darkened, and as little conversation as possible held with the child.

The room.

Prevent movement of the affected side of chest.

If there be marked pain at any one spot, and if with this there be much fever, it is an excellent plan to take three or four strips of sticking-plaster, each about  $1\frac{1}{2}$  inch broad, and sufficiently long to reach more than half-way round the body. Taking one of these, one end should be fixed to the skin two inches beyond the spine; the strip is now to be pulled forcibly over the painful part, taking care to compress the ribs while this is being done, and the other end is to be secured two inches beyond the breast-bone. Similarly the other strips are to be fastened, each being made to overlap its neighbour by about a quarter of an inch. By this means the movements of the ribs are restricted, and rest to the inflamed parts secured. The same end may be accomplished, though with the disadvantage of restricting the movement of the sound side also, by securing a broad bandage firmly round the chest from the level of the nipples or higher, to the lower margin of the ribs.

Difficult breathing to be met with emetics.

Should difficulty of breathing occasion annoyance, the ipecacuanha emetic (40) may with advantage be repeated,—indeed, it is well to do so if the secretion of mucus be copious, whether there be difficulty of

breathing or not; and if the difficulty be accompanied with a dry, hacking cough, no wheezing, and high fever, flour or linseed poultices with which <sup>Stimulating</sup> poultices. mustard has been mixed, should be substituted for those of bran, and they should be frequently renewed, till the skin can no longer bear the irritant, when the chest should be wrapped in cotton wool. Blisters or mustard alone should never be employed.

The condition of the bowels is a matter not to be neglected. Constipation is usual; it should be relieved by castor oil (48) or some other appropriate medicine (50 or 54); but in the course of the disease diarrhoea is not uncommon, and should be met without undue delay, by an astringent (29, 31). The air of the room should be kept fresh, warm, and of a uniform temperature. The inhalation of steam is useful and <sup>Steam</sup> inhalation. allays irritation.

The diet should be very simple, consisting at first of mere slops. It is of more importance than may be thought that the child be permitted to drink bland fluids, such as barley water, toast water, milk and soda water, or even plain water, freely; whereby the skin may be induced to act, and the naturally scanty urine augmented. Milk and arrowroot is a good food at first.

After thirty-six hours, or less if the acute symptoms (high fever, hardness of cough, restlessness, and great thirst) have passed away, the depressing mixture should be discontinued, and No. 47 (2) substituted for it; or if the cough be the chief symptom, No. 47 (3) will answer the purpose better.

At this stage stimulating liniments (18) employed with friction will do much good by loosening the

<sup>Food and</sup>

<sup>medicine</sup>

<sup>during con-</sup>

<sup>valescence.</sup>

CHAP. XXXIII. phlegm and promoting absorption. After a rubbing the chest ought to be wrapped in cotton wool.

Now veal or chicken-broth, or beef-tea, and such like simple nutritious diet, should be adopted.

As the cough becomes loose and the fever slight, the child, though better, still being weak, the diet must be made more liberal; a little largely diluted wine may be given twice a day or oftener, with or after food, and the stimulant mixture (No. 65) used instead of the cough medicine.

Typhoid symptoms.

Symptoms of a typhoid nature (p. 192, note) are always to be met with liberal stimulation, constant feeding, and great attention to all details of nursing.

Lance gums.

In every case the teeth must be examined, and any part of the gums requiring it should be freely lanced.

Tonics.

During recovery tonics (68, 71) ought to be given.

### CHRONIC BRONCHITIS

Cause.

Is generally the remains of an acute attack, and is more common in elder children, those from five upwards.

Symptoms.

The cough continues; it is soft and moist in its nature, but at night it becomes distressing. The pulse is quick, there is a tendency to night sweats, the child remains emaciated, the face continues pale, the eyes hollow, and the lips are dry and cracked. The patient picks at his nose constantly. If old enough to

Nature of expectoration.

expectorate, frothy white sticky mucus is spat up. These symptoms may go on for weeks if not checked, and may reduce the child to an alarming state of debility and emaciation. With care, however, a return to complete health may be looked for.

An occasional emetic may be necessary to free CHAP. XXXIII. the tubes of mucus, but the general treatment must Treatment. be of a stimulating and invigorating nature. When the weather permits it with absolute safety, the child should be sent out of doors; when in the house he should be kept out of draughts, and as much as possible confined to a room or rooms of equable temperature. The chest should be rubbed night and morning with the turpentine and camphor liniment (18), or with heated mustard oil till pimples appear. Wine should be given twice or three times a day with the meals, and a stimulating expectorant (47 [3]) prescribed; or a couple of drops of "liquid tar" (from a chemist) given on a lump of sugar two or three times a day, often greatly checks the secretion and promotes the expulsion of phlegm. By every possible means the strength should be kept up by good food, without overloading the stomach. The addition of pepsine (74) to the food will be found greatly to aid nutrition and to increase the appetite. As soon as the child is able to eat fairly well, the mixture may be omitted, and the iodide of iron and cod liver oil (71) substituted for it. A change of climate is always calculated to be of great benefit.

#### BREATHLESSNESS.

True asthma is very rare in childhood, but breath- Asthma rare. lessness, either more or less habitual, occurring paroxysmally, or dependent upon exertion, is not extremely infrequent. The subject is here only alluded to briefly to convey some information to guide parents.

Habitual breathlessness is most likely due to Varieties.

CHAP. XXXIII. — chronic bronchitis, or some allied lung affection, and should be treated as already directed.

Paroxysmal attacks of breathlessness may be due to child-growing (p. 239), to the pressure of deeply-seated enlarged glands upon the windpipe, to the pressure of a foreign body in the windpipe (see accidents), and occasionally to asthma.

When caused by exertion, the child being at ease when at rest, especially if there has been a previous attack of rheumatism, we may suspect the heart; but it must be recollected that exertion may excite paroxysms when there are enlarged glands pressing in the way mentioned.

**Management.** The cases which are due to the pressure of glands should be treated with iodide of iron and cold liver oil, change of air, and great attention to food and hygiene. These measures will also prove useful in true asthma, but during the attack an emetic of ipecacuanha wine, the warm bath, and diluted mustard poultice to the chest, and the administration of a stimulating anti-spasmodic medicine (7), preceded perhaps by a dose of chloral (8), should too be employed.

**Heart cases.** About heart affections in children, parents need not be nearly so apprehensive as is legitimate when the sufferer is an adult, but a physician alone can decide the nature of a case.

## CHAPTER XXXIV.

### WHOOPING-COUGH.

THIS is an infectious disorder, most common during <sup>CHAP. XXXIV.</sup> childhood. A single attack protects the constitution <sup>—</sup> Nature for the rest of life, with few exceptions. About seven days is the period of incubation; and, according to Squire, six weeks should elapse before the child is permitted to mix with its healthy companions (p. 147).

There is a tendency to ignore whooping-cough as <sup>Importance</sup> being an unimportant affection: but as a matter of <sup>and fre-</sup> <sup>quency.</sup> fact it is a serious and frequent complaint in India, and one of the most fatal diseases of childhood in England,—only convulsions, diarrhoea, scarlet fever, and inflammation of the lungs preceding it in fatality.

The affection is most common before the age of three; after five it is less frequent, and after ten it is rare. Strange to say, girls suffer more from it than boys. Frequently it occurs as an epidemic, and it is spread by contagion.

Whooping-cough commences as a common cold; <sup>Age of occurrence.</sup> with sneezing, running at the nose and eyes, tickling of the throat, and an irritating cough, together with slight feverishness. All these symptoms soon abate, except the cough, which becomes intensified, especially at night. Attacks of more or less severe

**CHAP XXXIV.** spasmodic coughing succeed in a few days. Each Symptoms. attack consists of fitful spasmodic expirations, after The "fit" of which comes a loud crowing inspiration. During coughing. the attack, which may last from half a minute to two or three minutes, the face becomes purplish, and the veins of the head and neck swell out. Vomiting will probably succeed, and thereby a quantity of tenacious mucus is ejected. In the intervals between the attacks the child is comparatively well, and he will return to his play. Paroxysms are easily induced by emotions, such as anger, excitement, laughing, crying, or hasty eating or drinking. The vomiting, which will occasionally occur, is purely mechanical, for immediately afterwards the child will ask for more food. From the time the first whoop is heard it may be expected that the child will become worse for about a week, and the whoop will continue probably for from three to six weeks. It may be noted that in very young children the whoop is rather the exception than the rule.

May be induced by emotions.

Duration.

The decline of the affection is notified by the lessened frequency and severity of the paroxysms. The whooping inspiration disappears, or occurs only seldom; the cough, however, remaining for two or three weeks longer. During the illness the child is pretty sure to become emaciated.

Complications.

The complication most to be dreaded is inflammation of the chest (p. 258). Convulsions occasionally follow a paroxysm; indeed, the over-distention of the brain with blood may sometimes, though rarely, occasion inflammation of the brain. Bleeding of the nose is not infrequent. Crimson spots of blood effused into the white part of the eye, or the occurrence of a

“black-eye,” due to the straining, need occasion no CHAP. XXXIV. alarm, and will soon disappear. Ulceration beneath the tongue due to scraping against the lower teeth during the paroxysms is a well-known complication. Collapse of the lung, due to the plugging of one of the air-tubes with tenacious mucus (p. 155), is a most formidable, usually a fatal occurrence.

When free from complications, whooping-cough is Prospects. seldom fatal. From the number of paroxysms which occur each twenty-four hours an estimate may be formed of the severity of the complaint;—twenty indicate a mild, thirty a tolerably severe, and over forty a grave attack of the disease. Lung and head complications are always dangerous.

Whooping-cough is one of those affections which Treatment. will run its course. We know of no remedy which will cut short the disease, therefore our business is to guide the patient safely through it. In treating the affection we must recollect that we are not dealing with an inflammatory disease, but with a nervous complaint which expresses itself spasmodically. During the *first stage*, or that of ordinary cough and First stage. cold, the fever mixture (36) will be useful; and, in addition, the ordinary precautions as to non-exposure, attention to the bowels and warmth of clothing, which will suggest themselves, are to be adopted. From the commencement the diet should be nourishing, though simple.

During the *second stage*, or that of “whooping,” Second stage. we rely upon anti-spasmodic medicines to relieve the paroxysms: we endeavour to check the excessive secretion of mucus, to allay throat irritation, to keep the air-tubes as free as possible, and to support the

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CHAP. XXXIV. patient's strength. To accomplish these objects the bromide of potassium (9) should be given when the paroxysms are severe, aided by one or two doses of the chloral mixture (8) daily. Alum, three grains in a little water every fourth hour, will act similarly, and it has the additional advantage of clearing the secretion of phlegm. Very frequently it will be found a good plan to alternate these medicines, the one with the other, every few days, if continuous aid is necessary. The application of the glycerine of tannic acid to the throat will be found useful in suppressing secretion and allaying irritation. The inhalation of carbolic acid vapour (20 drops to a pint of hot water), or spraying the throat with a two-per-cent. solution of salicylic acid, effects the same purpose. Should mucus accumulate sufficiently to impede respiration, an emetic of ipecacuanha wine (40) is to be employed. Attacks of difficulty of breathing at night will be relieved by the hot bath and mustard poultices to the top of the chest. Each day the chest and spine should be sponged with cold water, and afterwards rubbed with the turpentine and camphor liniment (18). Should there be wheezing between the paroxysms, a stimulating expectorant (47) may be used with advantage.

Outdoor exercise.

Gentle exercise in the open air, if the weather is sufficiently fine to admit of it, is not only allowable, but desirable.

Avoid excitement.

In every possible way causes of mental excitement should be avoided.

Third stage.

During the *third* stage, or that of abatement, the emaciation and debility are best met by the employment of cod liver oil and iodide of iron (71).

Should a complication arise, whatever be its CHAP. XXXIV.  
nature, be careful to abstain from anything like a Complica-  
lowering system of treatment or diet. tions.

As in measles, but less frequently, whooping-cough is After con-  
sometimes succeeded by a chronic state of bad health. sequencies.  
Any fault inherent in the system is then likely to be developed. Such patients are especially liable to a form of indigestion characterised by occasional bilious attacks, when a quantity of slime is purged and vomited, and the child becomes pale and thin, and suffers from night terrors. Then for a time farinaceous and fermentable foods should be stopped, including sweets and most kinds of fruits. By this means, and the occasional use of a mild purgative, a cure will be effected; frequent vomiting being treated by an emetic.

*DIVISION V.—AFFECTIONS OF THE BOWELS*

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CHAPTER XXXV.

CONSTIPATION.

CHAP. XXXV. CONSTIPATION of the bowels of children is an extremely frequent condition in India, and it is one which is perhaps more often mismanaged than any other ailment, yet the treatment of these cases is both simple and rational. Like everything else in the world, it is necessary that we should understand something about it before we can interfere successfully; otherwise the too common notion of rushing to powerful purgatives for relief is apt to be accepted and acted upon—a very serious mistake indeed.

Significance. The first fact which it is very desirable to bear in mind is this, that as diarrhoea always represents a danger, constipation is a condition which we can afford comparatively to ignore. It is seldom important, except when occurring as a symptom of head affections.

General symptoms. Of the symptoms there need be little said. The bowels do not act with regularity. The motions are almost always too light in colour, because the solidity of the mass has not permitted the penetration of the

bile. Sometimes the motions may be partially fluid, CHAP. XXXV. that is, we may have hard lumps ejected forcibly in the midst of coloured water; the lumps having then acted as an irritant, and caused increased exudation from the intestine. Sometimes a thin flattened tape-like portion is evacuated, indicating that the bowel is still loaded, but that a narrow passage exists through or beside its hardened and stationary contents. There are no general symptoms; neither headache, feverishness, nor other such troubles arise. Not infrequently a few drops of blood may be passed at the end of a hard motion, but this need not occasion any alarm. It is due to the forcing having ruptured one of the very minute and delicate veins near the orifice, and it is not of the slightest consequence, being very different in significance from a dysenteric stool.

It is only by understanding the cause of a case of constipation that we can hope to treat it successfully. We therefore proceed to consider the causes and treatment together.

1. *In infants at the breast* constipation is common 1. Infants at breast. The child is in good health, there is simply infrequency and hardness of the motions. During the first two months of life constipation is as common as diarrhoea is rare. The stools are more than usually white in colour; because being so hard, the bile and other colouring matters cannot penetrate them. In these cases the fault almost invariably is with the milk of the mother, who by reforming her ways, taking more exercise, and eating more vegetables, may generally effectually cure her child. It may be necessary to cause the mother to take an occasional seidlitz powder or a dose of Epsom salts. Sometimes,

CHAP. XXXV. but very seldom, a small quantity of manna (about half a drachm) may be added to the child's bottle each day, in order to help to initiate natural regularity, but it should not be continued long. It is even allowable to give mixture No. 52 in teaspoonful or smaller doses for a few days. Care should be taken that the exercise of the child itself (p. 104) be properly attended to.

2. Constipation of debility.

2. *The constipation of deficient tonicity*, that is, of weakness of the muscular coating of the bowel, is not infrequent in India among young children, whose general health has been impaired by climate. Sometimes it occurs as a sequence of fevers, the general debility involving the intestine as well as the muscles of the system generally. Children so affected are out of health, look pale, and probably their teething is rather backward. Everything must be done to improve the general health. The addition of oatmeal to the diet is desirable. A combination of aloes and iron (58), used in conjunction with the above measures, will in most cases be found to be a specific. After a short time the dose may be reduced to one-half with equal effect, and finally it may be discontinued altogether. Frictions over the abdomen with an aloes and soap liniment (28), or occasional enemata of cold water may be employed in addition to the foregoing, but generally it will not be found necessary.

3. Of sluggish liver caused by chill.

3. *A sluggish action of the liver*, producing an insufficiency of bile, which is nature's purgative, may occasion constipation. This form is frequently the result of chill in a weakly child, and it is usually temporary in its nature. Possibly it may be ac-

panied with slight jaundice, nearly always there CHAP. XXXV. is languor and sleepiness, the appetite is gone, and the stools are clay-coloured and fetid. Warm clothing, frictions with mustard oil over the liver, the use of a flannel binder, a light diet, and the employment of podophyllin (57) will generally set matters right in a short time.

4. *Improper food* may occasion constipation as well as diarrhoea. In infancy, when the motions consist of hard white lumps, each lump being coated with slime, the cause usually is either that the milk has been given insufficiently diluted, or that farinaceous food has been too soon commenced, or wrongly prepared. Here the food proves to be an irritant; the irritation causes the intestine to throw out additional mucus (slime) to protect itself, this coats the half-digested mass and prevents its further digestion. By pressure the mass becomes harder, and its slimy surface is so slippery that the intestine fails to push it along. This condition is apt to alternate with one of semi- diarrhoea, the stools being partly hard lumps, partly greenish water, slimy and offensive; in fact, let irritation proceed a little further, and a state of active diarrhoea will be established. Manifestly a reform in Treatment. the matter of diet, and conformity to the principles and rules already laid down, are called for; but it will be necessary to commence the treatment with an aperient; Gregory's powder (50) will answer admirably. The bowels having been evacuated of all offending matter, the proper regulation of the diet will probably be all that is further required; but it may be as well to employ the red mixture (49) for a few days subsequently.

CHAP. XXXV.

5. Constipation of elder children.

5. *Want of sufficient exercise, or of a sufficient variety in the food* may, in elder children, be an occasional cause of constipation. The bowels are not moved sufficiently frequently, and the stools are harder than they ought to be; otherwise there are no particular symptoms. Air, exercise, the use of oatmeal and brown bread, and an allowance of tea, baked apples, stewed prunes, or ripe fruit, will generally suffice to restore healthy action of the bowels. If medicine is necessary let it be wholly vegetable, and of a tonic nature; for instance, senna-tea one-third part, and infusion of chiretta two-thirds, of which half a wineglassful or more may be given twice or three times a day (or 52).

General points.  
Enemata.

*Note.* Enemata may always be employed with safety in any case of constipation. By such means, only the lower part of the bowel is emptied, but room is thus made for the progression of the contents of the upper gut. In using an injection great care should always be taken that the tube be well oiled, and that no force whatever be employed; and it is to be remembered that the gut inclines slightly to the left side. The careful introduction of the pawn stalk or pieces of soap is frequently very useful. Simple

Suppository.

friction to or gentle kneading of the belly is useful in most cases by helping to move onwards the contents of the bowel. A glass of cold water on rising each morning is a simple plan which not infrequently eases trifling cases. The employment of purgatives, except when combined with tonics as above directed, is not only useless but hurtful, and certainly the results will prove disappointing. Aromatics and carminatives (7)

Friction.

Purgatives.

Aromatics

may always be given in moderation when there is CHAP. XXXV.  
flatulency (*see* Colic).

The compound liquorice powder is a good, portable Other medi-  
and nice occasional aperient, which is admissible in cines.  
most cases. The extract of malt in teaspoonful doses  
often effectually cures constipation; and some  
obstinate cases yield to the continued use of pepsine  
(74), aided in the first instance by a dose or two of a  
mild aperient.

There is a form of constipation due to OBSTRUCTION of the bowels.  
OF THE BOWEL, characterised by paroxysmal pain over  
the abdomen, vomiting of bile at first and afterwards  
of the contents of the bowel. There is also hiccough,  
a distended belly, a dry tongue, rapid pulse, feverish-  
ness, and great prostration. Of course this is a very Is serious.  
serious matter. Possibly at first mild purgatives may  
have been tried, and no great harm resulted; but as  
the nature of the case becomes more evident it would  
be wrong and hurtful to push or use strong aperients.  
The persevering employment of large enemata (No. Management.  
45, to which  $\frac{1}{2}$  to 1 pint of warm water has been  
added) at short intervals till the mass is broken up or  
voided, may effect the desired relief; and a moderate  
dose of laudanum (not to exceed one drop for each  
year of age) is likely to assist materially and save  
much pain; but a surgeon should be summoned  
without delay.

## CHAPTER XXXVI.

### DIARRHŒA.

CHAP. XXXVI. WE now come to speak of an affection the existence of which is at once recognised even by the most unskilled, but which nevertheless is in a great number of cases popularly mismanaged. That there is an unnatural flux is self-evident, and with this knowledge occurs but the single prevailing idea—the use of astringents. Now it cannot be too clearly understood that this notion may often prove to be a disastrous one. Astringents exclusively, will, oftener than not, aggravate the complaint, or very possibly convert an easily-managed diarrhoea into a severe inflammatory affection; but, on the other hand, it is sometimes desirable to employ astringents at once and with energy.

Seriousness. A state of diarrhoea is one the existence of which we should never ignore; it always represents a danger. It is the most fatal of all the diseases with which the young child has to contend in India. Even in England diarrhoea ranks third as a cause of death of children under five years of age.

Frequency. Mortality. Never to be ignored. Let it be a maxim that children's diarrhoea in India should always be checked whatever be its nature or whenever it occurs. Heed not the advice to

Frequently mismanaged.

The prevailing idea, to rush to astringents.

Dangers of the notion.

allow diarrhœa to progress while teething is going CHAP. XXXVI. on. Firmly take your stand, and act upon the opposite principle; more particularly in the case of chronic "teething." diarrhœa, that form of the disorder in which temporizing is popularly most commended. It is not desirable to induce actual constipation when dentition is in progress; but do not for a moment believe that constipation, even during teething, is the fatal thing it is represented to be, or that it is a state fraught with all the dangers of convulsions. It is through diarrhœa rather than constipation that we court convulsions when the child is teething.

Diarrhœa may be produced by almost innumerable causes, of which, no doubt (1), errors in diet are by far the most frequent. (2) Dentition is popularly supposed to be a very prolific cause, but I believe the assertion to be far from the fact. No doubt diarrhœa is most common between the ages of six months and two years, that is, within the period of active dentition; but the intestines are, at the same time, undergoing a stage of development which renders them peculiarly intolerant of irritation. The susceptibility is, it is true, greater; and in delicate children, dentition may accelerate a diarrhœa, but it is a natural process, which does not give rise to disease in the healthy. (3) Atmospheric conditions, such as the damp and cold of the rains and sudden vicissitudes, as undoubted causes, may affect the child itself directly, or indirectly through its food.

Mr. Turner, of Portsmouth, writes:—"Given a certain percentage of infants in a town who receive other nourishment than breast-milk, the annual state of the town being the same, the mortality from diarrhœa will be entirely ruled by meteoro-

CHAP. XXXVI. logical conditions. . . . It is not so much the effect of the temperature on the infant itself which influences the mortality—indeed, it is very rarely fatal to the child nourished upon human milk; but it is the influence of the temperature on the child's food which determines in the highest degree the number of deaths."

(4) A polluted air, such as may be caused by want of drainage, malaria, foul surfaces, or water-closets, is another cause. (5) Worms are an occasional cause (see also p. 142).

The treatment  
not to be  
based upon  
the cause  
but upon the  
nature of the  
evacuation.

The causes chiefly affect the question of diarrhoea as indicating the proper measures for prevention; but so far as treatment is concerned, adhering to the practical view of the matter, it is rather by the nature of the stools and symptoms, indicating as they do faithfully the internal condition of the intestine (p. 151), that we must be guided. Even if it were otherwise, the cause is often difficult of discovery. It is all very well to talk of "removing the cause," but it is very impracticable advice.

Acute and  
chronic.

In the first place we divide diarrhoea into the *acute* and the *chronic*, using these terms as they are popularly understood.

#### (1) ACUTE DIARRHœA.

Acute diarrhoea occurs in five very distinct and very easily recognised varieties, each requiring a different kind of treatment. It becomes, therefore, a matter of importance to be able to discriminate correctly between them; but, as stated, there is not the slightest difficulty in doing so. The simplest practical classification is—

Varieties.

1. Simple diarrhoea, which is merely ordinary relaxation of the bowels.

2. The curdy diarrhœa of irritation, in which there are frequent undigested and acid motions. CHAP. XXXVI.  
—  
3. Fetid diarrhœa.  
4. Violent watery diarrhœa.  
5. Inflammatory or febrile diarrhœa, with which may be classed dysentery.

1. *Simple diarrhœa* may be due to a variety of causes, improper food being perhaps the most frequent. The ordinary motions are thin and numerous; *Symptoms.* their colour is either natural or nearly so. There may be vomiting at the commencement, and possibly griping. The negative symptoms and appearances are, however, just as important; there is no fever (unless the diarrhœa be a mere symptom of a fever), the motions are not scanty, nor are they like curd or pap thrown into discoloured water; they are not acid to litmus paper, and they do not consist almost wholly of greenish water. There is nothing *Treatment.* formidable about this kind of diarrhœa, which will yield rapidly to the following treatment:—In the first instance a dose of castor oil (48), or, better still, of Gregory's powder (50), should be given. The diet should be spare and very simple, no meat or vegetables being allowed. With younger children it is just as well to leave off milk for a short time, and to give chicken broth instead for a day or two. If the child be teething, the gums may be examined, and any tooth distinctly pressing should be set free with the gum lancet. Warmth is very essential, particularly over the abdomen, in this as in all forms of diarrhœa; indeed, without it other means will often go for nothing. Confinement to the house and restriction of exercise should be adopted. This

CHAP. XXXVI. simple plan is sufficient to cure the majority of cases.

If, however, the diarrhoea still continues, an astringent should be employed. Catechu with an aromatic, or catechu and chalk (29), will be found to answer the purpose admirably. The precautions mentioned should be continued for a couple of days after a cure has been effected.

2. Curdy.

Symptoms

and nature of  
stools.

2. *The curdy diarrhoea of irritation* is more important. The food is quickly passed, nearly unchanged, through the bowels. The motions are curdy, as though bread-pap had been thrown in amongst them, and they are acid to litmus paper. Vomiting is common, and griping not infrequent. The contents of the bowel are hurried along before they can come fully into contact with all the secretions, and therefore they are expelled in a state of semi-digestion.

Information  
thus gained.

The nature of these stools informs us that there is great irritation (whether arising from exposure to cold, improper diet, &c., being of no consequence), causing the intestines to work with undue energy; and the absence of fever tells us that there is no inflammation.

Treatment.

This much being understood, the treatment becomes apparent. First of all it is necessary to get rid of all the irritating curdy contents\* of the bowel, and then we have to assuage the irritation of the intestine which produces its over-action. To accomplish the first of these indications we employ, as in the former case, either castor oil or Gregory's powder; but we

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\* Through imperfection in digestion they have become "irritating," even though the food given may not have deserved to be so classed.

must not stop here. It is necessary to maintain a CHAP. XXXVI. gentle purgation by means of the red mixture (49) for Remove irritation by purgatives. from twelve to twenty-four hours. At the same time we must be most careful to avoid giving anything but the simplest and most easily-digested food, and that too of a fluid nature for the most part. The second indication is fulfilled by employing opium, alkalies, and carminatives. But it is a critical thing to use opium in the case of children. If the child be under one year of age the paregoric elixir is the best means of administering opium. The following prescription will meet all requirements :—

Paregoric elixir—two drachms.

Bicarbonate of soda—one and a half drachm.

Caraway water—two ounces.

To this a little essence of ginger may be added. Of the mixture, one teaspoonful should be given three times a day, but not oftener. In the case of an older child more benefit will be derived from the use of prescription No. 31. Improvement will very soon result, and when the evacuations have become free from acidity as tested by litmus paper, and quite natural in appearance, except that they be too loose, a simple astringent (29) may be ventured upon, but not sooner.

All the precautions as to diet, &c., mentioned as being necessary to the treatment of chronic diarrhœa, are here imperatively called for.

3. *Fetid diarrhœa* is not very infrequent in the warm weather, occurring generally between weaning and the fourth year of age. Its characteristic symptom is horrible offensiveness of loose, perhaps watery, muddy-coloured, copious motions of gritty appearance.

Soothe the irritated parts by opium.

Then stop discharge by astringent.

CHAP. XXXVI. Rapid putrefaction has taken place within the bowel, and severe irritation or inflammation may follow neglect or improper management. Astringents would of course do a great deal of harm, nor does change of diet seem to effect much good. The cause of the decomposition is located within the intestine, and our object must be to disinfect the contents as speedily as possible. Mere removal by purgatives will not accomplish a speedy cure, the germs of the decomposition are not thus removed and they contaminate the next supply of nutriment which enters; but in the absence of the proper medicines it is best to employ rhubarb in purgative doses in the shape of Gregory's powder frequently repeated. The following prescription is one which will be found very useful:—Bismuth, thirty grains, and salicin, twelve grains, mixed together, are divided into six powders, one of which is to be given every second hour to a child a year old. Dr. Braithwaite lays down a treatment which is very successful. He disinfects the contents of the bowel by means of the following mixture, which is suitable for a child two years old:—

Sulphate of iron, twenty grains.

Salicylate of soda, twenty grains.

Glycerine, three drachms.

Water, sufficient to make the whole three ounces.

(The iron and soda are to be dissolved separately in some of the water and the solutions mixed.) Of this port-wine coloured mixture, a teaspoonful is to be given every hour till the motions become blackened, which happens in about twenty-four hours; or a larger dose may be administered at longer intervals. The medicine should then be given every three or

four hours, and an occasional small dose of castor oil administered.

4. *Violent watery diarrhœa* is, fortunately, not very common. From six months to two years of age is the most usual period of occurrence. The onset is sudden, and often accompanied with vomiting. Frequent copious motions, which seem to consist almost altogether of greenish-coloured water, are voided. The hands and feet become cold, the face pale, shrunken, and wizened, and the lips thin. In a few hours, in a very severe case, the child will have all the appearance of an aged person. A most important characteristic symptom is the inability of the child to sleep, or even to rest; he moans, frequently shrieks, and is never quiet a moment (p. 313). The exhaustion is so rapid, by the draining away of the fluids, that a convulsion is very likely to ensue if treatment be not strenuously adopted.

Obviously here there is not a moment to be lost.

The objects of treatment are (1) to stop the purging, (2) to allay nervous irritability, and (3) to sustain the vital powers. (1) To check the purging we use gallic acid (30), or, in its absence, catechu and sulphuric acid (32), to the first dose of which (the first *only*) one drop of laudanum for every year of age the child has *completed* should be added, none being given if the patient is under one year of age. The mixture should then, without any more opium, be administered after every motion till the purging has ceased; or has become so checked as to be no longer dangerous. (2) To soothe the nervous system is a matter not one degree of less importance: and it is accomplished

Fre- Symptoms  
quently  
alarming and  
sudden.

—  
CHAP. XXXVI. by the bromide of potassium (9), which should be given every hour in conjunction with the gallic acid mixture, till sound sleep is produced. (3) The strongest jugged soup, the juice of raw meat, and white wine whey, or the brandy and egg mixture (*see* receipts) must be given at short intervals, and in small quantities at a time. (See also p. 314.)

Order of treatment.

Briefly, the order of treatment will be as follows : Commence by placing the child for five minutes in a warm mustard bath. Upon removal therefrom, give a dose of the astringent with the opium added, and if this be rejected administer half the proper dose of opium on a little sugar. Soon afterwards commence the bromide, and proceed as directed ; but if great restlessness occur at any time, give a dose of No. 8 once or twice. Should the astringent cause vomiting, it will be better to omit it altogether for a time, trusting to the sedatives and stimulation with proper food as being the more important part of the treatment.

Constipation may ensue.

Very likely constipation will succeed this attack. If so, do not meddle with it, but rest satisfied with a restriction to the simplest diet as the only further treatment necessary.

## CHAPTER XXXVII.

### (5) INFLAMMATORY DIARRHŒA AND DYSENTERY.

WHEN properly treated in the earlier stages, this is CHAP. XXXVII. one of the most manageable of all illnesses, but if Importance of early attention. allowed to become chronic it is always serious and sometimes formidable.

Here we have an inflammation commencing either Nature. in the mucous membrane or glands of the bowel, the symptoms varying according to the part of the intestine attacked. The danger is that ulceration or sloughing should happen.

The modes of propagation and the prevention of Propagation. these forms of bowel complaint have already been discussed (pp. 65, 142). It should ever be remembered that the effluvium from dysenteric stools may propagate the disease, wherefore it should be a strict rule to remove all such from the house immediately, and it is a good plan also to disinfect the motions (p. 138) so soon as passed.

As to the prospects of a case, all depends upon the Prospects. stage at which treatment has been commenced. If ulceration has had time to become firmly established, the case is always critical. If it be otherwise, a rapid recovery, under proper treatment, may with confidence be predicted. Real dysentery is extremely rare during early childhood.

CHAP. XXXVII.

Symptoms.

An attack is always accompanied by some fever, and it may commence in one of two ways—either as a violent fluid purging, at first of a curdy nature, or as a griping diarrhoea with straining and scanty motions. In the first kind the evacuations soon become much less copious, but more or less slimy and tinged with blood, while curdy substances float upon the surface, the symptoms merging into those of the second kind. In either case the child looks pale and worn, but his attention is easily attracted. He is thirsty and languid, and the tongue, which was at first moist, soon becomes red and dry. The bowels act with increasing frequency, but with diminishing results, till after a time almost nothing but bloody slime is voided, and that with great pain and straining. Ordinary faecal matter is either absent altogether or almost entirely so. Shreddy mucus and blood compose, or nearly compose, the whole stool, which has a very peculiar fetid sickly odour. Pressure over the lower part of the body may cause pain. The amount of straining is in proportion to the proximity of the mischief to the lower end of the intestine, and the griping and abdominal pain bear a ratio to the intensity of the disease. Improvement is first intimated by the reappearance of faecal matter in the stools, and by marked mitigation of the straining and pain.

Treatment.

Caution.

It is of great importance to treat these cases judiciously from the beginning. The too early employment of astringents is the serious mistake most commonly made. This class of drugs only increase the inflammation, by confining the acrid secretions within the intestine, where they undergo decom-

position, distending the belly with gas and producing CHAP. XXXVII.  
great pain and misery.

We must commence our treatment by clearing out the bowels of all offending matter, for which purpose castor oil is to be preferred; and then preventing Castor oil. the further ingress of food not capable of ready absorption, by accurately following the directions as to diet which are detailed on page 291. Particular Diet. attention should be given to preserving the warmth of the abdomen by using the flannel binder con- Abdominal stantly. Sufficient time having elapsed to allow of warmth. the action of the purgative, an interval of marked relief is sure to succeed. This is the period for the next step, which is to administer perseveringly the castor oil emulsion (51), a medicine which, simple Emulsion. though it be, is nothing short of a specific, when properly used, that is, *persistently, in very small doses and frequently repeated*. This is really the secret of success. (Castor oil alone will not succeed; it must be emulsified.) Half a teaspoonful every second hour, lengthening the interval as improvement manifests itself, is the usual dose, and the medicine should be continued for days. It is indeed rarely that a case will resist this treatment, of which it is impossible to speak too highly. In a couple of days the motions will lose their slimy, bloody, and curdy appearance, and only a little looseness remaining, the case is resolved into one of the simplest form of diarrhoea, which may need a dose or two of bismuth (31), or of an astringent (29), though the parent should be reluctant to employ these drugs at all, for the reasons above given.

The oxide of zinc (34) is another remedy of great Oxide of zinc.

value. After the operation of the first dose of castor oil, two grains may be given three or four times a day to a child above six months of age. Sometimes it seems to answer even better than the emulsion.

**Ipecacuanha.** With these two drugs properly used and properly supported by an efficient diet, it will almost never be necessary to resort to ipecacuanha, a drug which children tolerate very badly. If given at all, such small doses have to be adopted that its physiological effect can scarcely be hoped for. One-tenth to one-eighth of a grain in water and mucilage with a few grains of aromatic chalk powder, will be as much as a child will bear at each dose, which should be repeated as often as possible without inducing vomiting. Ipecacuanha should be given at as great a distance from meals as possible, and it is a good plan to administer a single dose of laudanum (a drop for each year of age) once a day while the child is taking the drug, the largest possible dose (as much even as two to four grains may with these precautions be sometimes retained) being given about an hour after the laudanum, also selecting, if possible, the time when the child usually sleeps. If the drug is retained for an hour or more it will have had time to affect the system. The necessary use of laudanum is an objection to the ipecacuanha treatment; however, again I repeat that it is very seldom necessary, and happily so, to resort to it for any of the bowel complaints of children. Certain native drugs form good substitutes for ipecacuanha (*see emetics*).

**Ipecacuanha enema.**

A further experience has taught me to discard the enema, as being too uncertain a means of introducing ipecacuanha into the system.

Turpentine stupes (*see* Index) to the abdomen, CHAP. XXXVII. in case of much pain, will be found to produce Stupes. — wonderful relief.

When the stools have become fæculent and destitute of blood, mucus, or slime, the chalk mixture with catechu (29) may be used to moderate the remaining looseness; but there should be no hurry in resorting to the astringents. While a diarrhoea is accompanied by a high temperature, the use of astringents is generally useless or hurtful.

Tonics (66, and afterwards 68) will perfect the Tonics and cure. <sup>to be used</sup> <sub>cautiously.</sub> *pepsinc.*

Pepsine (74) should be used for some time subsequently, to assist the weakened digestion.

In the event of excessive straining occurring throughout the course of the illness, an enema of tepid water, and the administration of a very small dose of castor oil by the mouth at the same time, will with great certainty afford complete relief from this distressing symptom.

In all cases of dysentery, Bael fruit (33) may be Bael. freely used throughout, when all inflammatory symptoms have ceased, and it may most conveniently be administered in the form of a demulcent drink.

## CHAPTER XXXVIII.

### (2) CHRONIC DIARRHŒA.

CH. XXXVIII.

Very serious  
in young  
children.

WHEN chronic diarrhœa becomes firmly established during the first two years of life, it is difficult to arrest. Even when checked, a long time is required to restore the intestines to proper working order. In older children it is less serious and more easily managed.

Symptoms.

The ease may have commenced in many ways: when firmly established the child becomes thin and pale, but he is tolerably lively, and he takes his food fairly well. The motions, of a pale colour and a putty-like consistency, are voided four or five times a day or oftener with pain and straining. As time passes, the child's condition will vary; sometimes he is much better for a day or so, sometimes he is worse. On the whole things do not go satisfactory, the motions gradually become more frequent; at times they may be like mere dirty water, and then again they may change to a mud-like substance. The child wastes, he becomes paler, and the skin assumes an earthy tint. He lolls about, lying down frequently, and he soon wears the aspect of an old man if things continue to go on badly. The motions may now become like chopped spinach, and they contain much

The motion.

slime, and sometimes a few drops of blood due to CH. XXXVIII. the straining. If recovery is to take place the first <sup>Bile in stool,</sup> <sub>the first sign of improvement.</sub> intimation of improvement will be the appearance of bile in the motions, which, as the bile increases, <sup>Bile in stool,</sup> <sub>the first sign of improvement.</sub> will become less offensive.

In the chronic diarrhœa of children the temperature should be accurately measured by the thermometer for a few days. If the temperature be above that of health, and it remain so day after day, we may fear some fixed disease has become established. If the contrary is the case, the temperature being at or a little below the standard of health, a hopeful view is justified.

Chronic diarrhœa is always serious, and the more Prospects. so the younger the child. When it occurs as a sequel to other affections, as measles, scarlatina, &c., the case is anxious. The thicker the stools the more hopeful the case, no matter how offensive the motions may be. It is always a favourable sign if dentition continue to proceed naturally, for if a great impression has been made upon the constitution, teething will be suspended.

In the treatment of this affection scrupulous Treatment. attention to hygienic conditions is a matter of the greatest importance, beside which drug-giving is quite a secondary consideration. An equable temperature, free ventilation night and day, warm flannel clothing, especially around the abdomen, and very careful regulation of the diet, all of which matters The food. have been previously discussed, are to be carefully attended to. If the child be very young, the quantity of milk should either be greatly restricted or milk should be altogether excluded from the dietary, and in

CH. XXXVIII. its placee non-fermentable foods substituted, such as chicken broth, whey with cream, and barley water. Large quantities of food should never be given at once; the more severe the purging, the smaller and more frequent should be the amount of food given. Copious drinks should be forbidden. Even for older children, those nearly a year old, only very small quantities of farinaceous foods are allowable, but we may use any one of the intermediate class of foods with great safety; and it may be mixed with whey or barley water, milk being almost or altogether excluded from the diet. Children who are still older should not be allowed to touch such easily fermentable articles as potatoes, sweet biscuits, and farinaceous matter generally, sugar, jams, &c.; but toasted bread with milk, fresh broths, a little fresh meat, green boiled vegetables, and custard pudding may be allowed. White wine whey is useful where there is exhaustion, or for older children we may then use the brandy and egg mixture. (Eustace Smith.) Raw meat juice is another very useful article of diet in these cases, or we may use the raw meat itself (*see* receipt 7).

Pancreatised milk.

In pancreatised milk (receipt 9) we have lately been furnished with a most valuable and safe means of nourishing these cases. An endeavour should always be made to induce the child to accept it.

Lime water.

Marked improvement sometimes follows the omission of lime water from the food of infants, and the substitution of the gelatine solution (receipt 4). The lime water seems to irritate the mucous membrane.

Baths.

Great benefit will always be derived from the daily or more frequent use of the hot bath, followed by an

inunction of oil; or the mustard bath when dealing with the exhaustion of older children. CH. XXXVIII.

Abdominal griping and tenderness will be greatly relieved by poultices to which mustard has been added, or by turpentine fomentations. Mustard poultices.

If the case be seen sufficiently early the stools will possess all the characteristics of those of the curdy diarrhœa of irritation (p. 280); and the symptoms, too, will be much the same, except that they are of a chronic nature. We then commence treatment as before, with Gregory's powder (50), and a short course of the red mixture (49), followed by bismuth and opium (31) for a few days only. As improvement takes place, the latter medicine may be omitted and Bael fruit (33) used instead. Medicines. If seen early.

Should, however, the looseness, now reduced to simple diarrhœa, still continue, we must resort to pure astringents (29).

If, on the other hand, the motions become scanty, shreddy, of very offensive odour, and contain blood, we must avoid astringents, and use the castor oil emulsion (51) with aromatics, such as powdered cinnamon and caraway, persistently until the symptoms yield: an astringent not being substituted until the tongue has become clean, and the motions reduced to the nature of those of a simple diarrhœa. The oxide of zinc (34) often answers admirably, sometimes even better than the emulsion, in these circumstances. Astringents should be avoided so long as the temperature of the body is high.

When signs of inflammation appear.

When the motions are large, fermented and putty-like, a bismuth (5 grains) and salicin (2 grains) powder after every meal, will be found most useful; while, at

Fermented motions.

CH. XXXVIII. — the same time, an occasional dose of No. 7 (b) may with advantage be given.

A cure having been effected, the greatest precautions as to diet, clothing, exercise, &c., must be adopted for some time, a relapse being very easily induced.

Medicine in convalescence.

During the period of convalescence, iron in the form of the "*Liquor Ferri Pernitratis*," as obtainable from the druggist, in doses of five drops three times a day, in half a wineglassful of water, after food, is a valuable medicine.

Pepsine always.

In all cases of chronic diarrhoea, the pepsine wine or powder (74) ought to be added to the food a short time before its consumption.

Medicines not to be hastily used.

Finally, I would recommend the dietetic plan, together with the use of pepsine, or pancreatised milk, to be tried fairly before having recourse to medicine.

Recovery gradual.

A sudden improvement should not be expected to follow treatment. That any degree of amendment is daily observable ought to satisfy the most sanguine. The mischief which weeks of disease has accomplished cannot be remedied without time.

## CHAPTER XXXIX.

### PROTRUSION OF THE BOWEL.

#### COLIC AND FLATULENCY.

IN long-continued bowel complaints, and indeed CHAP. XXXIX. sometimes without such disease, in delicate children, Causes. the bowel may protrude from the fundament at each evacuation. Habitual constipation in weakly children who are allowed to strain much at stool is another cause, and the irritation of worms is not infrequently associated with prolapse.

The condition cannot be mistaken when observed, Recognition. and it is not likely to remain long concealed, in consequence of the pain occasioned by it. The inverted gut will be seen to protrude as a purplish-red, thick ring, from the fundament.

There exists no cause for alarm. Reduction may Importance. be readily effected, and complete relief thus given. On the other hand, to allow the protrusion to remain unreduced for any length of time would be to incur a risk, because the pressure of the edge of the fundament might strangle it and cause mortification.

Having thoroughly lubricated the surface with sweet oil, the protrusion, protected by a handkerchief, How to reduce it. should be grasped with the points of the fingers, steadily squeezed for about half a minute to empty it of blood, and then pressed towards the body. After

— CHAP. XXXIX. a few moments of such pressure, the prolapse will slip out of sight. The child should be kept lying down for some time subsequently.

Recurrence. Should the protrusion recur, it will be well, before the oiling and reduction, to sop the parts with a solution of alum (a large teaspoonful to a pint of water will answer); or to smear the exposed surface with galls ointment (19), which, however, is open to the objection that it causes a little smarting.

Prevention. Prevention is the proper treatment. The constipation, the diarrhoea, or the debility being removed, the accident will cease to happen. But to accomplish this end, time is required. In the meanwhile the child should not be permitted to sit long at stool; indeed, it may be necessary to prohibit the sitting posture wholly, the patient being taught to evacuate its motions upon a napkin or sheet placed under it.

Other measures. In addition to the above measures, in a case of persistent protrusion, a couple of ounces of cold water in which six or eight grains of sulphate of iron (obtainable in the bazaar as Heera-Kusees) have been dissolved, should be injected into the bowel, twice a day; and the solution of pernitrate of iron (p. 293) administered internally.

#### COLIC AND FLATULENCY.

Really a symptom.

This condition is more of the nature of a symptom than a sickness. It consists of a spasmodic pain or griping of the intestine. When an infant screams and draws up its legs, and is free from fever, the hands and feet being rather cold than otherwise, it is probably griped or affected with colic. The stomach

is usually distended and hard—possibly there may be vomiting and a greenish motion or two may be passed.

Flatulency with or without colic is one of the causes. commonest accompaniments of indigestion, due to excess of food or errors in the diet of the infant, or to some indiscretion on the part of a nursing mother. The gases evolved from the undigested food distend the intestines and produce pain.

The first thing to be done in such a case is to administer ten drops of the sweet spirits of nitre in a teaspoonful of caraway or aniseed water; or to give a dose of prescription 7. In a few minutes an eructation of wind will follow this draught, the flow of urine after a short time will be increased, and the distress will cease temporarily. A dose of castor oil (48), or a stronger aperient (56) if there is constipation, and an emetic if there is sickness, should then be given. Either of these medicines may be aided in their action by an enema (44, 45). The warm bath followed by bran poultices to the stomach, will much aid in hastening relief. Should these means not give complete relief, a mixture composed of forty grains of bicarbonate of soda, half a drachm of sal volatile, and two ounces of caraway water should be made, and two teaspoonfuls of it given every second hour.

So much having been accomplished, we should set about rectifying the diet, which, in any case, for a few days following, should be of the simplest nature.

## CHAPTER XL.

### CHOLERA.

CHAP. XL.

Age.

Causes, &c.

Symptoms.

Distinction.

THIS terrible disease is very unusual among children under one year of age, but as the child grows older the liability to cholera gradually increases (p. 123 *et seq.*).

Concerning the mode of origin of cholera, the means of prevention and disinfection, the reader is referred to page 136.

There may be some premonitory diarrhoea. Soon, vomiting and purging of a material closely resembling rice-water in appearance, supervenes. The vomiting varies greatly in its intensity in different cases, but the purging always sets in and continues with great fury. Shortly afterwards succeeds coldness of the limbs, and frequently cramps of the muscles, a feeble pulse, coldness and lividness of the lips, cold tongue and breath. The eyes are sunken, the breathing difficult and oppressed, restlessness is intense, and thirst unquenchable. No urine is secreted. A cold, clammy perspiration covers the body. The whole appearance is appalling, the voice is lost altogether, and the pulse ceases to be perceptible at the wrist.

The only affection which at all resembles cholera is the violent watery diarrhoea, which has been

already described. The resemblance may sometimes be close between the two, but the stools of the latter never resemble rice-water; they are greenish. The clammy perspiration of collapse does not succeed. Vomiting is not persistent if it occurs at all, and the pulse is never wholly absent as it is in cholera. The breathing is oppressed in cholera, but free in diarrhœa. The lividity of cholera is supplanted by pallor in diarrhœa. Watery diarrhœa is well known in England, whereas cholera is there unknown except at long intervals and in brief epidemics. We have cramps in cholera, none in diarrhœa. Convulsions seldom terminate a cholera case, whereas when watery diarrhœa ends fatally it is usually by convulsions. The issue is hopeful in diarrhœa, whereas the contrary holds of cholera. But if in the early stage there is confusion between the two, as may be, no harm is done, the treatment of one condition being applicable to the other.

"Out of the large number of drugs and methods of Treatment, treatment which have been recommended for cholera, not one has yet proved of specific value, and all our efforts must therefore be directed against the various symptoms as they appear" (Steiner). For the relief of the vomiting, ice or iced soda water may be given. To relieve the thirst, water should be freely allowed, even though it be immediately and invariably rejected. At the outset of the case an attempt should be made to check the purging with astringents (30, 32), given very frequently, to the first dose of which one drop of laudanum may be added for every year of age the child has completed, but opium is not again to be administered throughout the whole case. When

lividity and great exhaustion occur, a stimulant mixture (64, 65) should be employed in conjunction with brandy. If there be drowsiness and collapse, apply mustard poultices to the calves of the legs, to the back of the neck, and over the heart. Milk and lime water may be tried as food, and afterwards arrowroot and chicken broth, if indeed the stomach will tolerate anything.

Prevention of spreading.

*Note.*—If all the precautions previously mentioned (pp. 129, 137), regarding the disinfection of the stools, the room, the bedding, &c., be adopted; and other matters which have been also alluded to, attended to, no fears need be entertained that the disease will spread from the patient, either to the attendants or others.

So-called “ cholera pills ” and “ cholera mixtures ” are sold very generally. They should never be given to children, as they all contain an amount of opium which would be very dangerous.

## CHAPTER XLI.

### WORMS.

THERE are three kinds of worms which infest the intestines of children, namely, the thread-worm, the round-worm, and the tape-worm, all of which are depicted in the plate.

CHAP. XLI.

The *thread-worm* varies in size from one-sixth to one-third of an inch, or even more, in length, the male being smaller than the female. They appear as represented in fig. 3, upon the surface of the child's motion, where they move briskly about. They reside in the lower end of the bowel: they are never found in the sucking infant, but among older children they are the most common of all kinds.

The *round-worm* (fig. 2) varies in length from four inches to a foot, the male being shorter than the female. It is smooth, of a white colour, and its body tapers off gradually to a point at either end. These worms inhabit the commencement of the intestine. Sometimes they make their way into the stomach, and they may even be vomited from the mouth. They are most common in children between the ages of three and ten years. Perhaps only two or three may be present at the same time in the body: it is seldom that their number exceeds twenty, but sometimes many more are found.

of thread-worm.

Habitat.

Description of round-worm.

Habitat.

## CHAP. XLI.

Description of tape-worm. The *tape-worm* (fig. 1) varies in length from about ten to thirty feet, and its breadth is about one-third of an inch at its widest part. The round head, which is only about the size of the head of a pin, is provided with a proboscis, armed with a double row of hooklets. The neck, narrow, and only half an inch in length, is joined to the larger part of the body by a long portion as thin as the neck itself. All this intermediate length is marked with transverse lines, and the whole of the broader part of the body is divided into plainly-marked segments. Each segment (being bisexual), when detached from the rest of the worm, has the power of producing fresh lengths of the parasite. A fully-developed tape-worm numbers "about 1,100 of these joints" (Cobbold). This worm inhabits the small intestine, or that end which is nearest to the stomach.

## Wonderful reproductive powers.

## Habitat.

The mode by which the various worms gain access to the body, and the precautions to be adopted to avoid their occurrence, have been already described (see p. 144).

## General symptoms.

## Not positive.

The symptoms are unsatisfactory, in that there is no sign or set of symptoms which renders it certain that worms are present. We may be led to believe by symptoms that probably these pests are in the body of a child, but ocular demonstration is the only means of certainty. One of the most constant signs is the passage of a quantity of jelly-like mucus with the motions, while at the same time the bowels are disordered and the general health is unsatisfactory. The child usually becomes pale and flabby, there are dark marks under the eyes, the breath is offensive, and nervous disturbance is manifested by restlessness

Fig. 1.

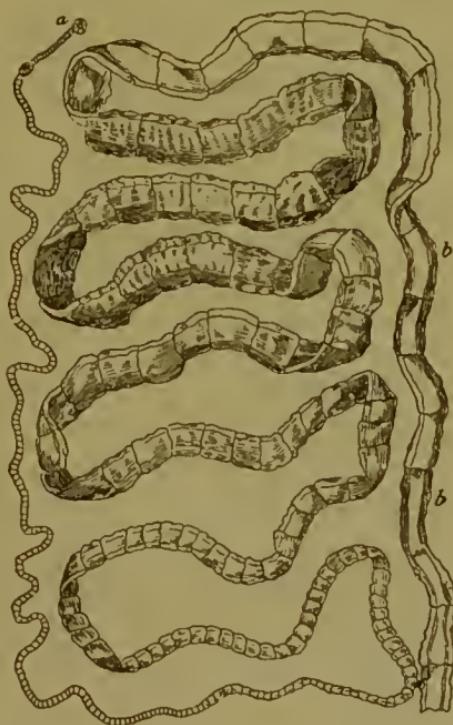
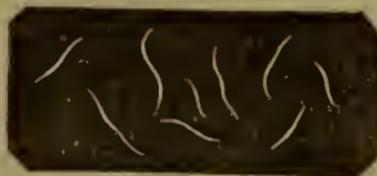


Fig. 2.



Fig. 3



at night, grinding the teeth, and startings during sleep; and by drowsiness during the daytime. There frequently is a short, dry cough: the belly is usually tumid and the appetite capricious, sometimes voracious, at others the reverse. Picking at the nose and itching of the fundament are usual. Such are the general symptoms, which are, however, by no means positively distinctive of worms.

Symptoms  
special to  
each kind.

When there are thread-worms in the bowel, itching of the anus, picking at the nose, and straining at stool are the most frequent symptoms. The round-worm causes abdominal pain, vomiting, and nervous symptoms which may terminate in convulsions.

The tape-worm gives rise to a sensation of "gnawing" in the belly, and to attacks of colic, a ravenous appetite, and progressive emaciation.

Examine the  
stools.

When there is good reason to suspect the presence of worms, the stools should be carefully examined, after the employment of an aperient medicine. If the suspicion be verified, the no less important information as to the kind of worm is also obtained by the inspection.

The folly of  
patent worm-  
medicines.

The public have an unfortunate habit of concluding that worms must be present when a child continues to fall off unaccountably: the result being that the unfortunate patient is dosed with quack nostrums, quite irrespectively of the nature of the worm, if any exist, and perhaps to the great injury of health.

Must know  
the kind of  
worm to  
attack.

Before we can properly treat a case it is essential to know the kind of worm we are to deal with: armed with this information the treatment becomes both simple and efficient.

The objects of treatment are (1) to kill the worms, CHAP. XL1. (2) to expel them, and (3) to remedy the bowel and Objects of general derangement which their presence has treatment. caused.

For the *thread-worm*, a brisk purgative (56) Treatment of thread-worms. should be given early in the morning, or if there be much bowel irritation, a dose of castor oil (58) will suffice. Throughout the day the diet should be of the lightest description, and in the evening a large enema (1½ to 2 pints) of soap and warm water should be injected so as to wash the bowel thoroughly out. This having been accomplished, we should at once inject and retain for a few minutes about 6 ounces of infusion of quassia, to which 30 drops of the tincture of steel have been added; or in the absence of these medicines, a teaspoonful of common salt dissolved in 4 or 5 ounces of pure water will answer the purpose (or 43). It may be necessary to repeat this treatment for two or three days running, either with or without the previous use of the purgative, as circumstances may indicate; following it up with steel and quinine (68).

The *round-worm* is destroyed as follows:—A dose Treatment of round-worm. of castor oil is to be given very early in the morning, and nothing but a scanty quantity of simple semi-liquid food allowed throughout the day. In the evening another dose of oil is to be administered. By this means the worm is laid naked, and exposed to the action of three or four grains of santonine powder, which should be given with sugar early next morning, on an empty stomach; or the powdered santonine may be sprinkled on a small slice of bread and honey, in doses of one or two grains, twice or three

times a day. A cure is frequently effected by a single dose of this drug, but the treatment may be repeated every second or third day if the presence of more worms is suspected. The oil may be dispensed with and prescription No. 4 given in the early morning, if there has been no constipation, and if the diet has been regulated for 24 hours previously.

Peculiar effects of santonine.

Santonine causes the urine to become of a dark colour, and it may occasion the patient to see objects as though they were of a yellowish colour. These peculiarities of the drug are, however, of no consequence, and they vanish when the medicine is stopped.

Treatment of tapeworm.

The *tape-worm* is, in the natural course of events, frequently expelled in portions, but as each segment which remains behind is capable of reproducing itself, it is obvious a cure is not effected till the whole worm has been expelled. The segments are always detached from the tail end, wherefore it is a good rule not to rest satisfied till the head has been voided. The head and neck are so very small (see fig. 1), that unless carefully looked for they may elude observation. Many yards may be expelled, but a case is not cured until the head has left the intestine.

But the head is well protected.

Must be exposed by special diet.

But the head is exceedingly tenacious of its hold, and being so small, and the intestine in these cases usually containing much mucus which protects the minute head from direct assault, it is necessary, for a few days previously to the administration of the worm destroyer, that the patient be put upon a non-farinaceous diet, from which potatoes, vegetables, pastry, and cakes should also be excluded; meat, eggs, and milk in moderate quantities constituting almost the sole food; very little bread, and that

little toasted, being allowed. After two or three days CHAP. XLI.  
of this food a dose of castor oil is to be given at <sup>—</sup> And castor  
night; and on the following morning, as soon as the oil.  
bowels have been relieved, thirty drops of the liquid  
extract of male fern (6) should be administered. Then the male  
Four hours subsequently a second dose of castor oil <sup>fern is given.</sup>  
is to be given. A very essential point is that very  
little, if any, food be allowed from the time the first  
dose of the oil has been given till the worm has <sup>No food</sup>  
been expelled, which will usually be about the middle <sup>given.</sup>  
of the following day.

In the absence of the male fern extract, pomegranate may be used in the manner directed (5). Use pome-  
granate if no male fern.  
The objection to its use is the large quantity of fluid required to be drunk, and the fact that griping sometimes follows its administration; still it is well to have a tolerably efficient bazaar substitute at hand.

Turpentine is an excellent remedy for elder children. Turpentine.  
The dose should be large, two drachms for a child of six, shaken up with a little mucilage and aromatic water. Small doses of turpentine are apt to give trouble.

To remedy the bowel and general derangement, Subsequent we must exclude, as far as possible, starchy food for management.  
a time from the diet, especially plantains and potatoes; but the diet should be nourishing. Infusion of chiretta with a couple of grains of bicarbonate of soda in each dose will check the excessive secretion of mucus. If irritability of the bowels still remains, the castor oil emulsion (51) or the red mixture (50) may be used for a few days till regularity has become established. Tonics (such as 68, 72) may be Tonics. given after all the local symptoms have subsided, with a view to the restoration of the general tone.

No starchy food.  
Chiretta and soda to check mucus.

## CHAPTER XLII.

### VOMITING.

**CHAP. XLII.** VOMITING in infants is a very common occurrence: it may be of very little significance, or it may be of most serious import. The habitual so-called vomiting of young infants soon after they have taken the breast is really not vomiting at all, but a simple emission of an unnecessary quantity.

**An easy process in the child.** There is no doubt that vomiting is easier in the child than in the adult: that it is accomplished with less effort, less distress, and less depression, probably because of the straighter position of the stomach.

**Temporary attacks.** Slight and temporary attacks of vomiting, lasting seldom beyond a few hours, are not uncommon in young infants. More severe attacks, lasting for twelve or twenty-four hours, accompanied with feverishness and disordered bowels, are also well-known results of irritation; but they yield to emetics, gentle purgation, and a carefully regulated diet (p. 88), the only result being that the muscles become a little flabby (p. 148); after a few days the full strength is regained.

**When chronic it is serious.** But when vomiting is persistent, when, in fact, it becomes a chronic state, accompanied by wasting and

prostration, the case is to be regarded as serious in its CHAP. XLII. nature.

At first nothing but curdled sour-smelling milk, Symptoms. mixed with bile, is rejected; but after a time only clear water is voided; the little patient's belly becomes tumid, the bowels are constipated, or alternately constipated and relaxed, the looser motions being very offensive. Fetid wind is eructated from the mouth, and the belly gurgles. All food is rejected shortly after being swallowed; even the water which is so greatly craved for is vomited. The child emaciates, he becomes pinched, pale, and clay-coloured, and he is cross and irritable. The skin is dry but cool, and the mouth is parched or clammy.

A child may go on in this way for months if not attended to. He is of course but a shadow of his former self, but the decline may not have been so rapid as to have attracted great attention. Should the fontanelle (p. 150) become depressed, and the head symptoms of bloodlessness (p. 313) appear, the danger is great and immediate.

The signs of approaching recovery are, lessened frequency of vomiting and restoration of the natural functions of the bowels.

The causes of this distressing and dangerous condition are to be found in departure from the laws which should govern diet and general hygiene. Premature weaning is one cause; overcrowding of sleeping apartments and insufficient and irritating food are others.

It is very important to ascertain the temperature with the thermometer (p. 157), because persistent Value of the thermometer.

CHAP. XLII.

vomiting is sometimes a symptom of the approach of inflammatory diseases of the chest or brain. In chronic vomiting, as a condition in itself, the temperature is always low, generally about 97°, whereas in inflammatory affections of course there will be some fever present (p. 153).

Treatment of simpler cases.

In the simpler cases a cure may be effected by withdrawing all fermentable articles of food from the dietary and applying the suggestions made at p. 89.

Treatment of obstinate cases.

But should the case prove obstinate, the stools and breath continuing to smell sour, and the vomiting persisting, we must adopt more active measures. When the child is being artificially fed, a wet nurse should be immediately procured. Very frequently a cure will be thus effected. But if this cannot be done, or if the child be too old to allow the idea to be put into practice, he should be fed upon equal parts of whey and weak broth, or barley water and broth. All food should be given cold and in small quantities at a time, a spoon being used and not the bottle, because the act of sucking seems to encourage vomiting. To the belly, frictions of mustard oil, followed by poultices, should be employed. Oil inunctions over the whole body will do much to re-establish the functions of the skin, to promote comfort, and encourage sleep. Should the vomited matter smell sour it will be well to commence treatment by the administration of an emetic.

Diet.

Frictions.

During convalescence.

Not till the vomiting has ceased for two or three days should any milk be allowed, and then it is only to be given in small quantities, diluted with twice or three times its bulk of barley water to which some cinnamon or caraway water has been added.

Starchy food should be avoided for some time, but CHAP. XLII.  
Mellin's food may with advantage be gradually introduced.

Should the fontanelle become depressed, brandy Stimulants. and sal volatile must be used, or the white wine whey for younger children. Five to ten drops of the former every hour or oftener, in a teaspoonful of water, often proves very beneficial as a sedative as well as acting as a stimulant.

Should the vomiting not yield readily to the above Arsenic and soda in very obstinate cases. remedies, half a drop of Fowler's solution of arsenic with three grains of bicarbonate of soda in a tea-spoonful of caraway water should be given three times a day; or, the Fowler's solution not being at hand, substitute the same quantity of ipecacuanha wine. Of course it is understood that such a medicine as arsenic must be compounded and administered with caution.

*DIVISION VI.—DISEASES OF THE NERVOUS  
SYSTEM.*

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CHAPTER XLIII.

HEAD SYMPTOMS.

**CHAP. XLIII.** THE expression “head symptoms” is one which is frequently used, and on the whole its signification is pretty well understood.

**Head symptoms of fever.**

When a child is suffering from any acute febrile complaint, as has been noted under each separate heading, certain signs of nervous disturbance may arise from the excessive heating of the brain and spinal cord, and it has been shown that the undoubted dangers thus arising are capable of being controlled (*see “Fever”*).

We, however, speak now not of head symptoms due to a previously existing febrile disease, but of symptoms arising independently of such a condition.

**Early symptoms of brain mischief.**

A child who has, perhaps, up to the present moment, been in his usual health, or who may only have been falling off a little for a short time previously, without being considered actually ill, suffers from disturbed sleep ; he grinds his teeth at night, he vomits and

becomes restless and irritable: the bowels are CHAP. XLIII.  
deranged, nearly always constipated; the look is  
haggard, the appetite is gone, the head is hot, the  
child is annoyed by noise and light, he starts up from  
his sleep in a state of terror, is generally feverish,  
and complains of pain in the head. Such are the  
earlier signs of commencing brain mischief.

These signs may, however, have attracted but little Progress of  
the case.  
attention, notwithstanding that they have perhaps  
occupied several days. It may be that the child's  
condition has not been noticed till there is a knit  
brow, persistent vomiting, stupor, twitchings of the  
muscles, some fever, squinting, alternate flushings and  
pallor, and occasional shrieking and excitement from  
which the patient soon again lapses into drowsiness,  
to be followed perhaps by delirium and convulsions.  
The fontanelle, or opening in the bones of the head  
of younger children, will be felt prominent, bulging,  
and perhaps throbbing.

These are the head symptoms which usher in  
inflammatory affections of the brain. But symptoms  
resembling them in many respects may arise under Similar  
symptoms  
may be due to  
an entirely  
opposite cause,  
viz., bloodless-  
ness of the  
brain, without  
any disease of  
the brain.  
totally different circumstances, and from a wholly  
different cause, importing a different disease, and  
requiring a diametrically opposite kind of treatment.  
A case of the kind may be described as follows:—A  
child has been under treatment for a serious diarrhoea,  
he becomes heavy and drowsy, but he does not sleep,  
he lies back upon the nurse's lap unwilling to raise his  
head, the eyes remain half open; perhaps there is  
vomiting, and the face is wan and pinched; every  
now and again he starts with a piercing shriek, which  
subsides as a series of shrill diminishing moanings or

whinings, till the patient resumes for a short time his previous lethargic state. Noises startle the child. The body is cool, frequently cold. If the fontanelle has not closed, it will be found to be depressed. A convulsion is apt enough to succeed this state if relief be not afforded, and should it unfortunately occur, no very hopeful view of the issue is justifiable. Here, again, the child is suffering from "head symptoms;" but let us note the difference between these and those previously alluded.

Distinction  
between the  
two.

## A.

## REAL BRAIN AFFECTION.

1. There has been no previous acute illness.
2. Always distinct fever as measured by the thermometer.
3. Constipation.
4. Frequent flushings of the face.
5. Intolerance of light.
6. Squinting & well-marked general head symptoms from the beginning.
7. Vomiting almost always present.

Vital  
difference.

## B.

## SIMULATED BRAIN AFFECTION.

1. Always occurs in the course of some exhausting sickness, or after premature weaning, either of which has greatly reduced the child.
2. Never fever, usually a lower temperature than that of health.
3. Diarrhoea.
4. Always pallid.
5. No intolerance of light.
6. Absence of head symptoms till exhaustion has become great.
7. Vomiting only occasionally present.

The difference between the two cases is really this: in the latter the brain has been so drained of its proper blood supply that it is in danger of suspending its functions; in the former the brain is so congested that its functions are in immediate danger.

The causes of the one (A) may be (1) constitutional predisposition, which has been called into activity by

bad hygiene or exposure to the sun ; (2) blows on the head may suffice ; (3) disease of the bones of the ear extending to the brain (*see "Ear"*). Of the latter (B) there is but one cause, viz., great exhaustion of the vital powers. Premature weaning may cause it. As might be anticipated, it is more frequently met with in India than in Europe, because of the greater frequency of exhausting diarrhoeas and the debility of climate.

It cannot require any further remarks to make clear Treatment. the necessity for a different treatment in either case.

(A) Symptoms indicating congestion or the earlier stages of inflammation require to be met with a light diet, active purgation, absolute quiet of body and mind, cold to the head, and sedative medicines ; whereas (B) symptoms of brain bloodlessness are to be treated with concentrated nourishment, stimulants, astringents, and the bromide of potassium as directed on page 283. Of this latter no more need here be said than to quote a caution as given by Dr. West. "If," he says, "in a case of this kind you fall into the error of regarding the head symptoms as signs of active disease, and withhold the medicines that might have checked the diarrhoea and soothed the irritability, while you apply cold lotions to the head and give the child nothing more nutritious than barley water in small quantities, because the irritability of the stomach, which results from weakness, seems to you to be the indication of disease in the brain, the restlessness will before long alternate with insensibility, and the child will die either insensible or in convulsions."

To enter more into details regarding (A) the commencement of active mischief within the head, the treatment should be as follows :—If the stomach is

Detailed treatment of the first.

at all loaded, we should begin with an emetic of ipecacuanha (39, 40); indeed, this is a safe proceeding in any case. Then, with as little delay as possible, a strong purgative (56) should be given, and at the same time an enema (45) administered. Of mixture No. 55, two teaspoonfuls should be given twice a day to keep up the purgation.

In the meantime the child should have been put to bed in a darkened and cool room, and the diet should consist only of light slops. That the most perfect tranquillity should surround the child is a matter of the highest importance; no one should play with him, or even speak with him, and irritability on his part should be controlled by means of the tepid bath, and the administration in the first instance of a dose of chloral (8), and subsequently the steady use of the bromide of potassium mixture (9). Cold should be applied to the head by means of ice or cold lotions (13, 35), and the room should be well ventilated.

By strict attention to these directions a serious attack may frequently be averted.

*Water on the brain* is a dropsical condition produced by the further progress of brain disease, which is at first indicated by the symptoms (A) above described, but they are then of a chronic nature, and come on very insidiously. Indeed, the enlargement of an infant's head, together with its loss of flesh, are frequently the first signs which attract attention. Then succeed squinting and the other signs enumerated, till convulsions terminate life in most cases. All that can be done in such an event is to adhere to the general laws of hygiene, to nourish the sufferer thoroughly, to keep the bowels well open, and to obtain medical advice as soon as possible.

## CHAPTER XLIV.

### CONVULSIONS.

MANY allusions have been made to convulsions on CHAP. XLIV. previous pages.

The phenomena of an attack are well known. "Warnings." Sometimes, but not always, there are "warnings" of the approach of a fit, such as convulsive twitchings of the face, startings during sleep, inward bending of the thumbs upon the palms of the hands, the fingers being doubled over them; a somewhat similar condition of the toes, and squinting. When a fit occurs Symptoms. the child becomes deadly pale, the features are distorted, the eyes stare and are rolled about, the breathing is irregular and catching, the body becomes rigid, and the hands are clenched. All this may happen in a minute or less, or it may occupy five minutes, a quarter of an hour, or even more. The more violent the convulsion, the shorter the attack usually is, and *vice versa*. When the fit is over, the child comparatively resumes the appearance of health, a perspiration succeeds, and he falls into a sound sleep.

A child seldom dies in a fit, but of such a catastrophe there is danger when spasmodic closure of the symptoms. air passages takes place. In that event the face

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CHAP. XLIV. becomes purple, the head is bent backwards, violent efforts are made to breathe, a crowing noise like that of croup is made as the air tries to pass through the narrow chink, but it becomes fainter and fainter till it eventually ceases altogether, or a louder and prolonged sound proclaims relief.

Practical classification. The causes of convulsions may for practical simplicity be divided as follows :—

1. Convulsions the result of *overheating of the blood*, and through it of the brain and spine. Such are the convulsions which frequently occur during a state of high fever, without any special warnings, except the elevated temperature of the body.

2. The convulsions of *bloodlessness of the brain*. It will be recollected that this form of convulsions occurs only in children who have been subjected to exhausting illness, and that it comes on with marked head symptoms (pp. 283 and 314).

3. Then there are the convulsions of actual *brain affection*, which commence with well-defined head symptoms which usually have existed and attracted attention for some days before the seizure occurs (p. 313).

4. Finally, there are what may be termed *simple convulsions*; that is, the fit occurs without the previous existence of any illness. Teething, for instance (which is popularly held responsible for almost all results of neglect), may, no doubt, increase the liability to convulsive disturbance. Fright has been known to cause convulsions, so has the sudden drying up of a scalp eruption; but the latter I believe to be a very rare cause. Mental suffering or shock on the part of the mother is a sufficient cause.

Worms occasionally give rise to convulsions. The children of epileptic parents are certainly more liable to convulsions than other children. Impropiety in the matter of diet is a very frequent cause. It is said that the children of those who marry very early or very late in life are unduly liable to the affection.

When a case of convulsions comes before you there can be no hesitation in at once classing it under one of the foregoing heads, and this is very essential, because the treatment is different in each instance.

Has the child strong fever? No. Then the case is at once excluded from No. 1. Is he undergoing any exhausting disease? Is he being severely purged? If not, and the child has been comparatively well till seized, No. 2 is excluded. Has he suffered from previous head symptoms (p. 313), without any debilitating complication having existed? If not, the brain itself is not the origin of the present seizure. But if in the absence of these three a child is seized with convulsions, the case must necessarily fall into the fourth class, and it becomes evident that some easily-removable cause has temporarily deranged the working of the nervous machinery.

No. 1. The treatment of a case of convulsions due to heat of body consists in reducing the temperature by immediately placing the child in cold water up to its neck, and pouring cold water over its head as described at p. 164. No time should be lost in undressing the child and in making preparations, but clothes and all, just as he is, he should be immersed in the bath. Consciousness will soon return and sleep be secured. The subsequent treatment is

(1) Convulsions of fever.

to consist of the adoption of the means detailed on pages 166-169, conjoined with the special treatment recommended for the particular form of fever from which the child is suffering.

(2) Convulsions of exhaustion.

No. 2. Convulsions due to exhaustion are rather to be prevented by the means described at p. 283. When a seizure arises from this cause it is always of very serious import. The child should be put into a hot bath to which mustard has been liberally added; he should be handled with the greatest gentleness, subjected to no sudden jerks; he should not be placed in the sitting posture, and care should be taken to keep the head low. While in, or after removal from the bath, we should endeavour to get him to swallow a little brandy and water, to which from five to ten drops of sal volatile have been added. Plasters made of one part of mustard and two of flour should then be applied to the calves of the legs. Rolled in a blanket, the child should be placed close to a good fire if the weather be at all cold. If the weather is damp, even though so hot that it is necessary to keep the windows open, a fire should be kept up in the room. Should consciousness return, we must pursue actively the administration of nourishment and stimulants, the latter, however, only with much liberality while great depression lasts. So much having been gained, we resume the preventive treatment detailed on page 283.

(3) Convulsions of brain disease.

No. 3. Here again we hope for most from preventive measures. But when a fit occurs the child is to be put into a warm bath (about 98° temperature), and cold applied to the head, either in the form of ice or of a cold lotion (13, 35). A couple of grains of

calomel may be placed upon the back of the tongue. As soon as the power of swallowing is regained, a dose of choral (8), is to be followed by the bromide of potassium mixture (9), each hour till all disposition to a return of the fit has passed away, and then the treatment described at page 315 should be resumed.

No. 4. For a simple convulsion the child is to be (4) Simple put into a hot bath (temperature 102° to 104°), and convulsions. while there cold water is to be poured upon the head. As soon as possible administer an enema (45). When capable of swallowing, an emetic (39, 40) should be given to empty the stomach and cause the skin to act. A strong purgative (56) should follow at the first convenient opportunity. The gums should be examined, and if anywhere angry and swollen by a pressing tooth, the gum-lancet should be brought into requisition. A dose of choral, (8), followed by the bromide of potassium at intervals of an hour till all undue excitement has subsided, should be given. If the bowels have not acted within three or four hours, a draught of Epsom salts and senna (53) should be given; it is a matter of great moment to relieve them thoroughly.

Great pains should be taken to encourage the sleep which usually succeeds convulsions. By means of the bromide of potassium rest may always be assured in cases where restlessness succeeds the fit, and a grain of chloral for each year of age of the child may be added to the *first* dose. Till sleep is procured there is always immediate danger of a recurrence of the seizure. The most perfect quiet should be observed. No attempts should be made to play with the child or to amuse him after he has recovered

CHAP. XLIV. his senses. Subsequently for a few days he should be kept upon a spare diet, and the bowels should be kept rather loose, except in class No. 2, when constipation, if it be induced, is to be encouraged. A cool surrounding atmosphere is essential. Great care should be taken to see that the mouth is free from all obstruction during insensibility, and the tongue should be drawn forward if it has fallen to the back of the mouth. If the cause of the seizure has not before been apparent, every effort should now be made to discover it, for however well the patient may seem after the fit, there certainly was some cause which has probably not been permanently removed by the management which has been adopted during the fit. It may have been improper food, indigestion, worms, flatulency, fright, or so forth, against any of which, when the accusation has once been established, precautions should be taken during the whole remainder of childhood.

## CHAPTER XLV.

### INFANTILE LOCK-JAW AND INFANTILE PARALYSIS.

THIS affection, though rare among European infants, CHAP. XLV.  
had better be noticed here, on account of the alarm Frequency  
and sense of helplessness which its occurrence is sure and fatality.  
to occasion. Among the children of natives the  
disease is unfortunately very common, and it is the  
chief cause of the terrible infant mortality of Calcutta.  
It is much more frequent in hot than in cold or tem-  
perate climates.

The affection usually occurs between the third and tenth days after birth; though it may happen within twelve hours of life, and still more rarely it may make its appearance after the ninth or tenth day. Occurs only during the first days of life.

Though the disease runs a rapid course, yet there are always premonitory symptoms, such as restlessness, whimpering, broken sleep, yawning, and hasty snatches at the mother's breast, which, however, the infant soon relinquishes. Most probably the first thing which attracts the mother's attention will be inability on the part of the infant to take the breast, a fact which the mother will at first be inclined to attribute to some fault of her nipple, unless she happens to examine the infant's jaws, which will be found more or less stiff. After a few hours the jaws

become fixed and the features undergo alteration, the lips are drawn tightly over the gums, the corners of the mouth are pulled downwards, and the half-closed eyes assume a peeping expression. The limbs and spine soon become partially or wholly stiff, the hands are clenched, and the head is bent backwards. At intervals a quick spasm passes through the whole body, a symptom the frequent repetition of which indicates a rapidly fatal ending. From the commencement the temperature of the body is high—103° or 104°.

**Seriousness.** Terrible and fatal as is this affection, the infant's condition is not altogether hopeless, though it must be admitted that recovery is the exception.

**Causes.** As to cause, it has been conclusively proved that poisonous air (pp. 38, 108) is the means by which the disease is most frequently originated. Chills during these days of tender life have been accused, and probably with some truth; so has bad management of the navel-string, by which it has been pulled and irritated. To the employment of too hot water for the bath the disease has also been imputed (p. 113).

**Treatment.** That the disease is preventible by avoidance of the causes above enumerated is the most important point to bear in mind concerning it, for, unfortunately, treatment has not led to satisfactory results. The great difficulty in the management of such a case is, of course, as regards the introduction of nourishment. The jaws must be separated by means of the end of a spoon, or a small piece of wood protected by linen rolled around it, and drop by drop some of the mother's milk, or a little milk and lime water, is to

be admitted cautiously from a spoon. (A surgeon would put the infant under the influence of chloroform, and feed it then by passing a catheter through the nostril down the gullet.) An enema of a teaspoonful of the same every hour may also be tried, a small glass syringe being used with the utmost <sup>care</sup> gentleness. The warm bath may be tried; and a grain of chloral and two grains of bromide of potassium, dissolved in half a teaspoonful of water, should be given every three or four hours, till the child sleeps or spasm is relaxed. Some lives are in this way saved.

### INFANTILE PARALYSIS.

This also is one of those diseases which, though <sup>is happily</sup> rare, comes upon the child with such sudden-  
ness, that it is essential the parent who is out of reach of medical aid should know something of it, in order to obviate that despair which total ignorance in the presence of a catastrophe is sure to engender.

Paralysis—that is, loss of the power of motion over one or more of the limbs—is always an anxious affair; but it will be a satisfaction to the parent to know that in the child its import is not nearly so serious as in the adult.

The symptoms are few; often there is nothing <sup>Symptoms.</sup> more than loss of motion to be observed. Sometimes with this there is an increased degree of feeling in the helpless parts; sometimes, but seldom, there is diminished sensibility. Most frequently the legs are affected, but it may be the arms, or an arm.

Paralysis may follow a sun-stroke, it may occur in <sup>Causes.</sup> the course of a violent brief attack of common fever,

or during the course of one of the eruptive fevers. Children have been born paralysed. Diseases of the brain and spine are other causes. Most commonly it occurs after a brief attack of apparently causeless fever, the discovery only being made when it is attempted to place the child upon his legs.

Prospects.

In itself the affection is never fatal. The prospects of a case will depend chiefly upon the fact whether or not the paralysis is the result of brain disease, which will be ushered in by the symptoms already described (p. 313). For such, and for children born paralysed, there is obviously not much chance of a good result; but in all other cases there is much room for hope. Sometimes the paralysis disappears after the lapse of a month or so; recoveries are not infrequent, indeed they are the rule, but only a few cases which have persisted for five or six months, recover. Nearly always, however, when not due to brain or spinal disease, some improvement upon the original condition takes place, but deformities and contractions are a pretty certain subsequent event, for which orthopædic surgery and the mechanist may be able to do much; otherwise the condition of the child is pretty satisfactory, its growth and education advance, the mental development is not impaired, and the sleep and appetite remain natural.

Treatment.

Medical advice should be procured, but in its absence the parent should seek out all possible causes of nervous irritation, and endeavour to remove them; the teeth should be examined and lanced if necessary, the possibility of the presence of worms considered, the bowels regulated, every minor matter thought of, and every clear conclusion acted upon. An iodide of

potassium mixture (12 grains to one ounce of water; dose, a teaspoonful three times a day) should be given for about a week following the attack, and then iron, either as steel and quinine (68) or the syrup of the iodide (71), should be substituted and persisted in for a long time. The affected limbs should be well shampooed daily, after the first week, with a stimulating liniment (18) or mustard oil. The diet should be liberal, and the child should live as much as possible out of doors. Galvanism is a remedy which, at the proper time, the physician is pretty sure to employ.

In case the patient has been previously much the subject of malarial fevers, quinine in small doses should be given in addition to the other remedies, and a change of air sought without delay. A sea voyage is always calculated to benefit these cases.

May be of  
malarial  
origin.

## CHAPTER XLVI.

### SUN-STROKE AND HEAT-STROKE.

CHAP. XLVI. SUN-STROKE is really nothing more than a very sudden  
Nature. — and aggravated attack of ardent fever produced by the  
heat of the sun's rays.

Fever has been stated to be a burning up of the body. So it is; but what originates the combustion? A poison has entered the blood, which produces its earliest effect upon the most tender point, namely, the nervous system. Thus we have shivering, depression, and other symptoms. Through the fault of the nervous system, nutrition is impaired, and disintegration of the muscles is caused, whereby preternatural heat is produced. Now ardent fever represents the effect upon the nervous system without the previous intervention of a poison such as is introduced in measles, small-pox, ague, and so forth. Sun-stroke represents a still more severe nervous shock, by which the nervous currents are even still more violently interfered with. We have, in fact, the climax of the febrile state produced instantaneously almost, secretion and excretion are suspended, and all the natural means of getting rid of heat are in abeyance. Accumulation of heat is the natural result, and the limit of temperature beyond which life is possible may be speedily reached; and, if passed, paralysis of the heart and muscles of respiration succeed, and death is the result.

Causes.

Exposure to the direct rays of the sun or great heat in a confined atmosphere, particularly if a free supply

of drinking water is not available, are the causes of CHAP. XLVI. the attack.

Natural heat is produced within the body by chemical changes, which evaporation from the surface regulates, and "so beautifully is this balance preserved, that the stability of the animal temperature in all countries has always been a subject of marvel. If, however, anything prevents this evaporation, radiation and the cooling effects of morning winds cannot cool the body sufficiently in the tropics. Then, no doubt, the temperature of the body rises, especially if in addition there is muscular exertion and production of heat from that cause" (Parkes).

Excessive external heat is the sole cause, whether Symptoms. the patient be instantly struck down by the sun (sun-stroke), or whether he be less suddenly attacked by accumulated heat (heat-stroke).

Of the symptoms there is little to be said. The patient is insensible, the eyes are fixed, the pupils contracted, the white parts of the eyes are of a red colour, the breathing is rapid and after a time noisy, the heart may be observed to beat tumultuously against the chest, the skin is burning hot, and the patient appears as if dying. Convulsions may or may not occur.

These symptoms may be preceded by certain Warnings. premonitory signs, such as thirst, suppression of the perspiration, giddiness, faintness, and suppression of the urine.

*Prevention.* Non-exposure to the sun, properly Treatment. Preventive. ventilated rooms, the use of the punkah, an abundance of cold drinking water (p. 63), and loose and light clothing, are the proper preventive measures. Upon the occurrence of premonitory symptoms, or indeed after any exhausting exposure to great heat, a

CHAP. XLVI.

— cold bath should be given, a purgative administered, and the child kept quiet in a cool room under a punkah.

During attack.

*Upon the occurrence of an attack.* Cold in the form of the cold bath, or of cold water poured continuously over the naked body, is the great remedy; but for either to be efficient, they must be persisted in till the temperature is thoroughly reduced. Not a moment should be lost, lest the narrow lines beyond which recovery is impossible, be passed. As soon as swallowing power is regained, a full dose of antipyrin (37) should be given, then the patient should be laid in the coolest available place, and allowed there to sleep if he will, cold being still kept to the head. The thermometer should be in constant requisition, and should the temperature show any disposition again to rise, cold, as before, is to be resorted to. Great care is to be taken not to mistake the gradual approach of insensibility for sleep, but if the thermometer be sedulously employed and the application of cold thereby regulated, there will not be much danger of this error occurring; at the same time, sleep is not to be interfered with. Insensibility will not recur without increase of heat. Any disposition, after recovery, to restlessness and excitability, should be met by the administration of a dose of chloral (8), followed by the bromide of potassium (9) and cold to the head. As soon as possible a purgative should be administered, none being better than the ordinary salts and senna; and then the patient should be put upon moderate doses of quinine for a few days; or, if there be any one competent to do so, half the quantity should be injected beneath the skin.

After treatment.

*DIVISION VII.—AFFECTIONS OF THE KIDNEYS  
AND BLADDER.*

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CHAPTER XLVII.

DROPSY.

DROPSY signifies the accumulation of a watery fluid, CHAP. XLVII. either in the abdominal cavity, or in the loose fat Definition. which lies immediately underneath the skin, throughout the whole body. It may involve the abdomen and the body generally at the same time, or it may be only partial, the legs below the knees being the only parts affected.

Dropsy among children in India is not so serious a Not so serious  
as in England. complaint as it is in England, because the majority of the Indian cases are of malarial origin (p. 197), and are simply a sign of general debility, whereas in England, scarlatina, by damaging the kidneys (p. 209) is the most constant cause.

The countenance is the first part to appear puffy Symptoms. and swollen if the child has recently been much in the recumbent position ; if otherwise, the feet are the first to swell. The swelling of a dropsical limb may be known by pressing the point of one of the fingers steadily into it for a few moments, the pit so caused

— CHAP. XLVII. will remain after the pressure is removed. The belly at the same time will probably begin to enlarge, and the child assumes a pasty appearance.

**Classification.** For practical purposes dropsy had better be divided into two classes, viz., (1) those which are due to

(1) **Malarial.** malarial debility, and (2) those which arise from kidney affections. The first may be known by the fact of the child having been a sufferer from malarial fever, which has left him weak and debilitated, the spleen may be enlarged, and the other signs mentioned on p. 197 will be present, without there being any appearance of kidney disease. The second is recognised by the occurrence of a distinct febrile attack accompanied with pain across the loins, and a very scanty flow of urine, having ushered the attack in, or the fact of its having followed upon an attack of scurvy.

(2) **Kidney disease.** As to the prospects of these cases, dropsy is always to be regarded as a serious complication, but the majority of the malarial cases recover under proper management.

**The first is very amenable to treatment.** The second class of cases is much more serious. So long as the quantity of urine voided remains scanty, and while at the same time the dropsy goes on progressing, anxiety will justly be great; but I have seen many very formidable cases of dropsy in India, in which the kidneys were severely affected, recover; and I cannot but think the proportion of recoveries is greater than in England, on account of the climate, which increases so greatly the facilities for preserving or re-establishing the action of the skin.

**Treatment.** As to treatment:—(1) The dropsy of malarial debility, being only a result of a general condition, is to be managed in the way laid down at page 198,

which in the majority of cases will yield a cure. (2) The dropsy which springs from the injured kidneys not being able to draw away sufficient water from the body, is to be treated upon somewhat different principles. The great point here is to re-establish the functions of the skin, and to cause it to act as much as possible; in fact, we endeavour to get the skin to do a great part of the work of the kidneys, which thus obtain rest, while at the same time the noxious materials ordinarily got rid of through the kidneys are withdrawn through the skin, and blood-poisoning is prevented. From the commencement, therefore, we keep the child in bed and as warm as possible. A vapour bath (*see index*) should be given daily, or even twice a day if the child is strong enough to bear it, and a copious perspiration should be induced on each occasion. The bowels should be kept loose by the use of seidlitz powders (61) occasionally, or by mixture No. 55. The diet should be light but nourishing, consisting chiefly of milk and farinaceous foods, such as bread and butter and puddings. Light broths may also be allowed, but not much meat till there is some improvement. On no account should alcoholic stimulants of any kind or any medicine containing opium be given. A poultice should be prepared and placed upon the bed, the child should then be laid upon his back so that the poultice envelope the whole of the loins; this may be done for an hour, morning and evening; or longer on each occasion, if the child have patience to bear it. By these means the acute symptoms will be overcome, the feverishness will diminish, and the quantity of urine increase. As soon

Re-establish  
functions of  
skin.

Vapour bath.

Purgation.

Diet.

Kidneys.

**CHAP. XLVII.** as this is effected a diuretic mixture (38) will be of great service, but not before. When convalescence is fairly established, a course of tonics (68) may be commenced. It may be judicious to combine the tonic with an aperient (70) for a time, to ensure and prolong the relief to the kidneys.

Generally happens at night.

Causes.

### INCONTINENCE OF URINE.

Children sometimes suffer from inability to retain their urine except for very short periods. In most cases it is only at night that the annoyance occurs, but occasionally it happens both day and night.

Trustworthy nursing essential.

Its details.

Very often the cause is simply bad management, by which a dirty habit has been engendered, and which may become more or less naturalised and difficult of removal. Acidity of the urine, the presence of worms in the intestine, an elongated and adherent foreskin in boys, and even general constitutional weakness, are each of them sufficient to produce this effect.

To remedy this state of things is frequently not easy: but whatever efforts be made, without the assistance of a careful nurse no good need be hoped for. No fluid should be allowed for two or three hours before bedtime. The child should be taken up two or three times to urinate during the night. Upon each occasion he should be thoroughly roused up, so that the act be wholly voluntary on his part. He should lie upon a hard bed, and be prevented from lying upon his back by fixing a cotton reel behind, by means of a string passed through the hole, and tied around the waist: this will cause him to awake or move again on his side, should he happen to lie upon his back.

The acidity of the urine should be tested with litmus paper. If it be great, three grains of bicarbonate of potash or soda may be given in a little water three times a day.

The urine, it is to be recollect, is naturally acid, therefore Caution. the litmus paper ought to turn slightly red, but it should not become instantly of a bright red colour. On no account should the medicine be continued long. It would be wrong to neutralise the acidity altogether.

But it is chiefly by a very careful regulation of the Diet important. diet that a healthy state of the urine is to be maintained. Entire withdrawal of meat from the diet has been known to cure many cases. Cold sponging to the spine just before bedtime is sometimes useful if it be not too annoying to a sleepy child. These preliminaries being settled, the child should be put upon steel and quinine (68), unless he be of a particularly weakly constitution, when the iodide of iron and cod liver oil (71) will suit better. Constant outdoor exercise should be enjoined, and every means to improve the general health adopted.

If there be any congenital defect, a surgeon should be sought, to perform the simple operation of circumcision, which is frequently a very effectual remedy.

There are other medicines (belladonna, strychnine, and ergot of rye) which are of great value in these cases, but they are of a nature that precludes their use by any but a medical man. Belladonna, in the form of tincture, may perhaps be employed by adding five minims to each dose of prescription No. 9 and giving the mixture three times a day.

*DIVISION VIII.—SKIN DISEASES.*

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CHAPTER XLVIII.

NETTLE-RASH, ECZEMA, PRICKLY-HEAT,  
HERPES, ITCH, RING-WORM.

CHAP. LVIII. 1. RED GUM or WHITE GUM (*Strophulus*) are names given by nurses to a trivial eruption consisting of little groups of red or white pimples chiefly on the face, but it may also happen on the limbs and body. A modification of diet, a few doses of the red mixture, and the application of a lotion consisting of one drachm of oxide of zinc, half an ounce of glycerine, and six ounces of lime water, will relieve the irritation and soon cure the complaint.

2. Nettle-rash. 2. NETTLE-RASH may be caused by improper food, such as a child may surreptitiously obtain ; for instance, unripe fruit, cucumber, pickles, and so forth. The rash consists of a number of elevated, itching, and burning points, very like in appearance the effects produced by the sting of a nettle ; it seldom lasts more than a few days, and requires for its management the simplest treatment,—an emetic, if there is likely to be any offending food in the stomach ; purgation (49, 52, 55), careful regulation of the diet, and the administra-

Description and treatment.

tion of three or four grains of bicarbonate of soda in CHAP. XLVIII. some infusion of chiretta after each meal, for a few days. Locally, tepid sponging or the warm bath affords almost instantaneous relief; oil should be applied to the part afterwards, or, better still, the zinc and lime water lotion above mentioned.

2. ECZEMA is often a troublesome affection. It 2. Eczema. Very trouble-  
some. usually selects the bends of the elbows and knees, the scalp, and, in young children, the cheeks, neck, and arms, for its position. A number of minute watery vesicles appear, the surrounding skin being irritable, red, and hot. The contents of the vesicles soon become whitish, the irritation increases, and the child is sure to scratch and break them. The discharge still further irritates the surrounding skin,—indeed, it seems almost to burn it and to remove the thin outer layer. After a short time the discharge hardens into a yellowish crust, which cracks in many places, and from these cracks more of the clear irritating fluid exudes, as well as from under the outer edges. Portions of the crust may even become detached, leaving behind a raw, angry, moist surface. When of a mild form the crops of Mild form. vesicles die away naturally, the skin of the affected part scaling off afterwards; but fresh crops of vesicles are apt to recur.

Eczema is caused by defective digestion, and it Causes. indicates debility. It is not contagious.

The objects of treatment are to relieve the local Treatment. distress and to improve the general health. A Local. poultice should be applied to the scab, and repeated until the latter is detached; the inflamed surface thus exposed should not be washed or wiped, but the

CHAP. XLVIII. exuding fluid may be sopped up by a little bit of sponge. Over the raw surface, the oxide of zinc ointment, which has been diluted with glycerine sufficient to make the compound thin enough to be dabbed on with a dossil of lint, is to be freely applied without any rubbing. A piece of rag should be lightly applied over the ointment. While any inflammation remains this treatment should be persisted in. Afterwards the oleate of zinc ointment (to be had of the chemist) may be applied, and if the disease still resist, chrysophanic acid ointment (16) should be used ; or it may, as a very efficient remedy, be used in the first instance.

## Diet.

The child's diet should be nourishing but simple, consisting chiefly of milk, light puddings, and soups.

## Medicinal.

An aperient should always be given at the commencement, if there is any constipation. In any case it is well to give the red mixture (49) for four or five days to ensure the healthy action of the digestive organs. Afterwards tonics, of which the iodide of iron and cod liver oil (71) will best suit most cases, but in the event of the child being comparatively robust a vegetable bitter may prove more useful (66, 69, 72), or if the child has recently suffered from any malarial affection, steel and quininc (68) is to be preferred. In cases of obstinacy arsenic (3) alone will prove of bencfit. The use of pepsine (74) will much help the cure.

## 3. Prickly-heat.

3. PRICKLY-HEAT is a well-known affection due to congestion of the skin from heat, and to excessive perspiration. The appearance is too well known to need description. As a rule no treatment is needed further than to avoid the use of flannel next the skin,

## Cause.

but when troublesome the ordinary dusting powder, CHAP. XLVIII. composed of oxide of zinc and starch (11), is sufficient Treatment. to effect a cure or to give relief. If not, a little powdered sulphate of zinc, in the proportion of 20 grains to each ounce of the dusting powder, may prove effectual; a lotion of borax, half an ounce in eight ounces of water, is often found very useful in allaying the irritation; but the most effectual remedy of all is a solution of sulphate of copper (10 to 20 grains to each ounce of water), which should be sopped lightly upon a limited portion of the affected parts after the morning bath, the lotion being allowed to dry spontaneously on the surface; but copper is a poison, and must be used very sparingly, lest enough to cause trouble be absorbed. There is no truth in the assertion that prickly-heat is a good thing, and that it should not be "driven in." The fact is that it seldom appears much upon debilitated subjects, whose skins are deficient in blood; it affects more readily the healthy skin, but it in no way contributes to health; on the contrary, the function of the affected skin is, for the time being, impaired.

The fallacy  
that prickly  
heat ought to  
be en-  
couraged.

4. A Vesicular Eruption, termed SHINGLES or 4. Herpes. *herpes*, sometimes occurs. It may appear as a number of little blebs about the lips, mouth, and forehead, especially after attacks of fever, and then it is of such Trivial kind. a trivial nature as to require no treatment. But when a number of rather large vesicles, filled with clear Symptoms of fluid, resting upon an inflamed base, pass halfway a more severe case. round the body as a sort of half-belt, which seldom encroaches at all upon the opposite side, are observed, we have to deal with a case of shingles. Of course the eruption may be much more limited than this in

**CHAP. XLVIII.** extent, but its peculiarity is that it confines itself to its own side, almost never passing the spine or the breast-bone. On the fourth or fifth day the blebs dry up and form dark scabs, which fall off. The appearance of the eruption is ushered in with a good deal of fever and general disturbance, and severe shooting pains in the neighbourhood of the rash.

**Care to prevent friction.**

**Treatment.**

It is important to prevent children from scratching and rubbing off the heads of the vesicles. If the eruption is very painful and hot, the application of cold in any shape will be found to relieve it. Mild saline laxatives (55), such as seidlitz powders (61), or the effervescing citrate of magnesia, with occasional warm baths, and the use of a plain and somewhat low diet, will frequently be found sufficient treatment. The eruption should be protected by being dusted with the oxide of zinc and starch (11) and afterwards covered with a layer of cotton wool, the air being as far as possible excluded. A course of tonics should be commenced after a few days.

**5. Itch.  
Caused by a parasite.**

**Symptoms.**

5. **THE ITCH** is a contagious affection, dependent upon the presence of an animal parasite, which burrows beneath the skin and produces by its irritation the appearances which characterise the affection. The favourite positions of the parasite are between the fingers, at the elbows, and on the insides of the thighs: but in young children the hands are rarely affected, the belly, feet, and ankles being selected. Intolerable itching, particularly after the child has become warm in bed, is the most annoying symptom; the scratching which results removes the tips of the minute pimples which mark the positions of the insects, and sores may even be caused, which may prove troublesome to treat.

A child affected with the itch should be isolated CHAP. XL VIII from all others. All clothes which he has recently Treatment. worn should be boiled before being washed. All the affected parts of the skin should be thoroughly and liberally rubbed with the sulphur ointment (20) night and morning for three or four days. The child should be clad in some old flannel garments of little value, which should be destroyed subsequently.

6. RING-WORM (*see also p. 147*) is also the produce of 6. Ring-worm. a parasite, which in this case is a vegetable. It is Due to a vegetable parasite. contagious, and appears either on the head or body. It occurs in circular patches, varying in size from that of a two-anna piece to that of a rupee. The surface of these patches is covered with scales of a dirty whitish colour, the margins being reddish and elevated. When the scalp is attacked, the hairs break off a little above the surface, so that patches of baldness result; but when the disease is cured the hair grows again.

The affected parts should be washed twice a day Treatment. with carbolic soap and water. All hair in the vicinity of the patch should be clipped close to the skin, and the chrysophanic acid ointment (16) should be thoroughly rubbed into the parts twice a day. Should this remedy not be at hand, the patches may be painted with strong acetic acid about every third or fourth day, diluted citrine ointment being applied in the intervals.

As bazaar remedies Dr. Waring recommends borax Bazaar remedies. one drachm dissolved in two ounces of vinegar, as an application; or the following ointment:—sulphate of copper powdered, 20 grains; powdered galls, 1 drachm; lard, 1 ounce; mixed thoroughly and rubbed into the diseased part. He also speaks well of the leaves of

**CHAP. XLVIII.** the cassia (or ring-worm shrub); the plant is named by the natives dádmurdan or dád-ká-pát. The fresh leaves should be bruised with lime juice into a thick paste and thoroughly well rubbed into the affected part twice daily till a cure is effected.

**7. Pemphigus.** 7. PEMPHIGUS is common; commencing as small red spots, the skin soon rises into blebs, which may grow to be as large as marbles. At first the blebs are filled with clear fluid, which afterwards becomes opaque; round each there may be a slightly red zone, but practically the surrounding skin is healthy. There is a little fever. When the blebs burst a rather painful little sore is left. The remedies are arsenic (3) internally, and zinc ointment (17) to the sores.

*DIVISION IX.—AFFECTIONS OF THE EYES  
AND EAR.*

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CHAPTER XLIX.

INFLAMMATION OF THE EYES.

THIS is a common, but essentially a “military” CHAP. XLIX. disease, the children of other Europeans in India not Frequency. being peculiarly liable to it; the soldiers’ children congregate together, and the disease in its severer forms being infectious, spreads rapidly among them. Native children, too, suffer largely, particularly those of the poorer classes, who live in small huts without any means of ventilation.

Newly-born infants are subject to an inflammation Causes. of the eyes (p. 26) from causes which are, for the most part, easily preventible. Cold is capable of originating an unimportant form of the affection. Dirt, squalor, and poverty combined are the most frequent causes among native children. Debility, acting upon an unhealthy constitution, may originate a formidable sort of ophthalmia. Most cases are probably contracted by contagion.

Not only is the mattery discharge of ophthalmia Very contagious if introduced directly into other children’s contagious.

CHAP. XLIX.

eyes, as it may be by the use of a towel, common to all ; but the minute particles of matter which become detached, dry up, and, floating in the atmosphere, are capable of infecting other eyes with which they come into contact. A simple watery discharge is not contagious, but a yellow matter discharge is generally highly so.

Symptoms.

The symptoms of ophthalmia vary considerably in severity. The affection usually commences with heat and smarting of the eye, and a sensation as though a grain or two of sand had got under the lid, causing the child to rub the organ with violence ; tears flow copiously, and the thin membrane covering the white part of the ball is seen to be of a pink colour and permeated with enlarged blood-vessels. A discharge, at first watery, but subsequently semi-thick and yellowish, causes the lids to adhere during sleep. Most cases, if properly treated, will not pass this stage ; but if the case becomes worse there is intolerance of light, so much so that the child will lie upon its bed with its face dug into the pillow. The eyelids are sure to swell considerably ; indeed, the upper lids may puff out like a pair of soft balls of a purplish colour. This last-named appearance is indicative of very severe inflammation. If at this stage, one or two little white pimples appear upon the cornea (or clear part of the eye) the case must be considered as serious, for upon bursting they leave little ulcers behind, which, if deep, heal leaving white spots, which may interfere with clear vision. Visible blood-vessels running into the cornea show that the inflammation is very severe, and brow-ache is another bad sign. An amount of febrile disturbance commensurate

Heat and  
itching.Discharge of  
water.Signs of  
severity.Ulcers of  
cornea.

Fever.

with the inflammation is always present. When the child's eyelids are separated, profuse gushes of scalding tears, with which matter is mingled, will take place. The white spots which remain after healing of ulcers of the cornea usually diminish with time and as the child's general health improves.

In all cases of ophthalmia the most scrupulous Treatment. cleanliness is a matter of the greatest moment. Almost continually, washing and bathing should go on ; Cleanliness. in mild cases with simple warmed milk and water. A little sweet oil or soft simple ointment should be smeared upon the edges of the lids to prevent their sticking together and retaining the irritating tears or discharge in contact with the eye, during sleep ; and the alum and poppy lotion (23) should be used as Alum and frequently as possible, every two hours at the least, poppy lotion. always taking care that a drop or two actually gets between the lids on to the eyeball. Should it so happen that the lids do adhere, no violent attempts should be made to separate them, but with the utmost patience they should be bathed with warm water or milk and water till they open of their own accord. The child should be encouraged to move about as much as possible in the open air, if the intolerance Fresh air. of light be not too great, the eyes being protected by a green shade ; but even if there be considerable intolerance of light, the room in which the child is confined should be most thoroughly ventilated. A hot, close room will surely aggravate the disease. The diet Diet. should always be liberal, but plain. The bowels should be kept in a state of regularity by simple laxatives, active purgation is never necessary ; nor are other medicines as a rule required, unless the child is

Use no force  
to separate  
the lids.

CHAP. XLIX.

Tonics.

manifestly below par, when a suitable tonic—such as steel and quinine (68) for children who have suffered much from climate, a simple vegetable tonic (66, 69, 72) for those whose digestive apparatus is deranged, or the iodide of iron and cod liver oil (71) for those of unhealthy constitution—should be prescribed.

In severer cases.

Stimulants and tonics.

The severer forms of ophthalmia, particularly when there is any appearance of ulceration of the cornea, require to be treated with stimulants, wine or brandy, strong soups, and the most nutritive diet which can be devised. The bowels should receive particular attention, the nature of the stools being examined, and if found unhealthy, restored to normal condition by the red mixture (49). A tonic as above described should be given in all such cases. The child should be wholly confined to a darkened but well-ventilated room. In all cases, when possible, a lotion of the extract of belladonna (three grains to one ounce of water) should be dropped once a day into the eye till all acute symptoms, particularly pain and fever, have subsided.

Caution as regards belladonna.

A small quantity of the extract might in most cases be obtained by post from the nearest dispensary. It is very desirable that this should be done, because if the inflammation is extending to the deeper parts of the eye the application of belladonna is a most powerful means of checking its further progress. But it must be recollected that belladonna is an active poison, and therefore care must be taken to keep it out of the way of children, and not to smear the extract around the eye as is often done in the case of an adult, because the child may get its finger into it and convey some to the mouth.

Alum wash.

Caustic drops.

While continuing the alum-wash as above described, caustic drops should be used as follows:—Six grains

of caustic should be dissolved in an ounce of rain or distilled water, and each morning after the eye has been thoroughly cleansed, the eyelids should be separated and a couple of drops of the solution let fall upon the ball of the eye from the end of a quill or little piece of stick, which should not be allowed to approach the eye too closely lest the child should struggle and cause itself an injury.

Great care is to be observed in opening the eye. *How to obtain a view of the eye.* On no account should any pressure whatever be made upon the ball; but the thumb of one hand should rest upon the cheek-bone while two fingers of the other are placed upon the brow; gentle traction can thus be made from fixed bony bases, without the possibility of pressing upon the eyeball. An ulcerated eye has been burst by pressure being injudiciously made in endeavours to force the lids apart.

In cleansing the eye some recommend the use of a *Syringing the eye.* small glass syringe, whereby the secretions may be effectually washed out from under the lid. With adults and elder children, who may be relied upon to keep perfectly quiet, this means is very effectual; but with younger children I should fear to recommend it, lest a struggle inflict irreparable injury. A stream of water let into the eye from a distance of a couple of inches from a small piece of sponge will answer sufficiently well, the lids being held apart as above described.

## CHAPTER L.

### INFLAMMATION OF THE EAR.

**CHAP. L.** THE ear, as is well known, is of the nature of a drum.   
**Description of ear.** There is an external curved tubular opening, which is terminated by a tense thin membrane: from the back of the throat comes the eustachian tube, which admits air to the other side of the membrane. The first of these divisions is termed the *external* ear, which conveys the sound to the drum and causes it to vibrate: and the second is called the *internal* ear, which is supplied with the machinery by which the sound is conveyed to the brain. When the internal ear is closed by the enlarged tonsils of a sore throat, temporary deafness results, because the air confined in the space will bulge the drum out and prevent its free vibration.

**Inflammation.** 1. *Inflammation of the External Ear* may be occasioned by cold, accumulated wax, by the presence of foreign bodies, or it may succeed measles or scarlatina.

**Symptoms.** The symptoms are simple: a throbbing heat and itching, pain when the point in front of the external opening is pressed upon; increased pain at night, feverishness and restlessness. Moving the jaw, crying, and sneezing increase the pain. The interior of the ear will appear red and swollen, and from it, after a

short time, a thick discharge is secreted. The pain greatly diminishes with the appearance of the discharge, which after a time becomes watery.

The removal of a foreign body (Chap. LV.) will naturally suggest itself if any be present. Superfluous wax should be got rid of by gentle but persistent syringing with warm water, and glycerine should be dropped within the ear subsequently, still further to soften the wax for the next syringing. The child should be put upon a spare diet, and moderate purgation induced. Warm poppy-head fomentations should be assiduously employed, and succeeded by hot linseed-meal or bread poultices. The very gentle injecting of warm water will remove the accumulated discharge. But should the inflammation degenerate into a—

2. *Chronic Discharge* from the ear, very serious attention should be given to the case, for if it be allowed to run on indefinitely the bones inside the ear may be denuded of their covering, and become diseased, carrying actual danger to the brain. A mother should never allow an ear discharge to continue, notwithstanding any tales she may have heard regarding the dangers of checking.

The ear should first be syringed for the purpose of cleansing it thoroughly, and then an examination of the tube should be made in a good light. By pulling the lobe of the ear forwards between the finger and thumb, the curvature of the tube will be removed, and a much better view obtained. A portion of a visiting card rolled into a cone, and slightly oiled on the outer side, will assist the view, if inserted gently. Should a piece of flesh (called a

2. Chronic.  
Requires  
great atten-  
tion.

Treatment.  
First cleanse  
the parts.



How to ex-  
amine the ear.

CHAP. L.

“polypus”) be found obtruding into the tube, surgical aid alone can avail: but a foreign body, such as a pea or a piece of stone, or a quantity of hardened wax, may also be discovered. The former should be removed by the means described in Chapter LV. (3), and the latter by repeated syringing and the application of glycerine.

Tonics.

Nearly always the general health is affected in these cases, wherefore a tonic, such as steel and quinine (68), or iodide of iron and cod liver oil (71), is needed from the commencement.

Application.

With gentleness the ear should be syringed out twice a day, after which a drop of the glycerine of tannin (26) should be allowed to fall into it, or a camel's hair pencil may be used to anoint the sides of the tube with this application. In the absence of the above, a solution of alum or of tannic acid (6 grains to 1 ounce of water) should be similarly used. Then the orifice should be gently plugged with a soft pellet of cotton wool saturated with glycerine, or in its absence with sweet oil. A sedative draught (8) may be given to relieve pain.

Blister.

Should the case still prove obstinate, a small blister may be applied behind the affected ear.

3. Inflammation of internal ear.

3. *Inflammation of the Internal Ear* is extremely painful. It is accompanied with much fever, and sometimes with convulsions. Hearing is interfered with, there is headache and buzzing in the ears. The orifice of the small tube communicating with the mouth becomes blocked up, the matter which forms is therefore pressed forcibly against the drum, which is very apt to be ruptured, and thus immediate relief is sometimes obtained: but irreparable mischief has

Symptoms severe.  
Deafness.

been inflicted. In the absence of medical aid all the parent can do is to follow the instructions given upon the previous pages in so far as they are likely to be useful; but as soon as the condition is recognised every endeavour should be made to place the child under the care of a surgeon, for not only may permanent deafness result by the breaking of the drum, but more serious injury may be inflicted by the bones becoming implicated and originating a brain affection or causing *paralysis of one side of the face*. When the latter event succeeds a discharge from the ear and deafness, it is serious, but it is right to explain that the same symptoms may result from exposure to cold and damp, and that then the affection is comparatively trifling, tending to a natural recovery.

CHAP. L.  
Management.  
Seriousness of  
neglect.

*DIVISION X.—ACCIDENTS.*

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CHAPTER LI.

BRUISES, BLEEDING, WOUNDS, BURNS AND  
SCALDS, AND SPRAINS.

(1) BRUISES.

CHAP. LI.  
Cause of  
“black and  
blue” appear-  
ance.

WHEN a part is bruised it turns “black and blue,” because the minute blood-vessels beneath the skin have been ruptured by the force employed, and the blood flows into the loose fat which underlies the skin. The more blood that has been thrown out, the greater the intensity of the colouration. If, in addition to discolouration, there is heat of the part, then inflammation accompanies the bruise.

Treatment.

By treatment we endeavour to prevent any more blood being effused, to prevent or allay inflammation, and to induce absorption of the blood already effused. The application of cold in the shape of ice, or of a cold lotion (13, 35), will usually effect the first and second of these objects. The arnica lotion (14) will accomplish the latter and subdue pain. A piece of folded rag, saturated with the lotion, should be firmly and evenly bandaged upon the injured part. Leeslies

should never be applied to a bruise, they only increase all the mischief. Subsequently, when only some hardness and discolouration remain, rubbing the part once or twice daily with the soap liniment (12), or with brandy and oil mixed in equal parts, or with a stimulating liniment (18), will prove useful.

## (2) BLEEDING.

Bleeding from wounds is usually unimportant and rarely dangerous. (1) Pressure and (2) cold are the two chief means by which bleeding may be arrested; but there are medicaments known as (3) styptics, which are also often very useful; and finally there is (4) the ligature.

It is usually found that when the edges of a wound have been brought together, and the part firmly but not too tightly bandaged, all bleeding ceases or nearly ceases; any little oozing may be stopped by the application of cold water or ice.

Should these means not prove sufficient, a thick small hard pad of linen placed over the bleeding spot, and secured there by a firmly-adapted bandage, will nearly always completely staunch the flow. By-and-by the tightness of the bandage may be relaxed, say after two or three hours; but should bleeding then recur, it will be necessary again to tighten it, taking care that the limb be bandaged from its extremity upwards to beyond the wound.

Should a jet of blood spout from a wound: at once press the point of the finger upon the bleeding spot, and keep it there till preparations are completed for dressing the wound properly, when by placing the edges in apposition, and adapting a pad as above

Wound of an artery.

described, success will probably be attained. Cold should then be applied, and the child should be kept extremely quiet for a couple of days, during which time the pad, if removed for the purpose of cleansing and dressing the wound, should be replaced with the original care.

Should a jet of blood issue forcibly the instant the Ligature may finger is removed, a ligature should be applied. By be necessary. means of a forceps or pair of tweezers seize the piece of flesh from which the blood is issuing, including, of course, the bleeding orifice—a portion about so large

A only, need be pinched up. Then, while still holding it tightly with the forceps, a piece of thin cord or stout silk should be passed around the raised part at the place shown by the dotted line, and tied as tightly as possible by an assistant: one end of the cord should be cut off short, and the other left hanging from the wound. In a few days it will become detached, and allow of removal.

When impracticable use tourniquet.

Should it be impracticable to apply a ligature, a handkerchief should be tied around the limb between the wound and the heart, while pressure with the pad is still to be made upon the wound itself. It may be difficult to tighten the handkerchief sufficiently; in such a case, by passing a short piece of stick underneath and giving it a few twists round,

Danger of too prolonged constriction.

tightening to any extent may be made. But it is dangerous to keep up a severe tightening for any length of time; the circulation is thus stopped, and mortification might ensue. Very severe tightening is seldom essential, and if it be, gradual loosening should be made after a short time to ascertain how far the handkerchief may with safety be relaxed.

Oozing from a cut or torn wound usually yields to the free application of cold, but should it persist notwithstanding, the surface may be sopped with a strong solution of alum or of tannin, or in case of urgency with the pure tincture of steel.

Bleeding from a vein is known by a copious flow of dark-coloured blood. This is not of anything like the same seriousness as bleeding from an artery. Pressure is almost always sufficient to arrest it. Should direct pressure upon the wound not prove sufficient, then pressure should be made with the handkerchief and stick between the wound and the end of the limb—that is, *below* the wound, not above it.

### (3) WOUNDS.

*Wounds* are divided into (1) clean-cut or incised *wounds*, (2) lacerated or torn *wounds*, and (3) punctured *wounds*.

1. *Incised* *wounds* are easily treated unless they bleed much, in which case the means just enumerated are to be employed to check the hemorrhage. The next thing to be done is to cleanse the surface most thoroughly, and to remove all particles of foreign substances, such as pieces of gravel or glass. For this purpose a stream of cold water and a small piece of clean fine sponge are to be employed. It is a matter of great importance that the sponge employed be thoroughly clean, new if possible, otherwise unhealthy inflammation or even erysipelas may be brought on. Carbolic acid (24) may with advantage be added to the water; the strength of the solution should not exceed about one part to sixty of water, but one to one hundred will suffice.

Check bleeding.  
Clean the surface thoroughly.

## CHAP. LI.

## Adapt edges.

Bleeding having been checked, except perhaps some little oozing which will remain while the wound is open, the sides are to be brought accurately together. In simple cuts a strip of sticking-plaster or of court-plaster to keep the edges together will be sufficient. Sticking-plaster should never be made to encircle a limb wholly, yet the strips should be sufficiently long

How to apply and broad to grasp the skin firmly. Each strip must be attached first to one side of the wound, then the free end is to be pulled firmly with one hand (while the other hand is employed keeping the wound together) and fixed firmly on the opposite side. Unless the cut be very small, each strip had better be about half an inch broad and sufficiently long to go a little more than half-way round the limb. When preparing the strips it is a good plan to double each upon itself and cut

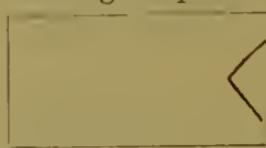


FIG. A.

a piece as in Fig. A, from its centre, so that when opened it will appear as in Fig. B, the aperture being placed directly over the wound to permit of the escape

of any discharge from it. Each strip when applied



FIG. B.

should slightly encroach upon the edge of its neighbour. A bandage

## Bandage.

may be adapted over all with just sufficient tightness to support the parts thoroughly. If painful, cold water may be applied to the bandage. The sticking-plaster need not be removed till it has become loose, in which case the sides of the wound should be held together till the plaster be renewed.

Wounds of the *palm of the hand* may be accom-

## Cold, if inflammation.

panied with severe bleeding. The best thing to do, CHAP. LI. pending the arrival of a surgeon, is to place a hard <sup>Wounds of</sup> wooden ball or a cork in the hand, which should then <sup>palm of hand.</sup> be closed and bandaged firmly upon the ball or cork, while at the same time the elbow should be bent as much as possible, and so retained by means of a bandage.

2. *Lacerated* wounds seldom bleed much, but they 2. Lacerated,  
liable to  
suppuration.

are especially liable to inflammation and suppuration. There may be a great deal of difficulty in thoroughly cleansing them, but this must be effectually and patiently done, the carbolic lotion (24) being employed for the washing. The deeper parts, if they cannot be got at, ought to be syringed out with the lotion. This done, we may bring the edges together with sticking-plaster as before, except that the plaster is not to be pulled tightly, lest the escape of matter be impeded. Do not confine  
the matter. A piece of lint, doubled twice upon itself, and saturated with carbolic oil (25), should now be applied so as to cover more than the extent of the wound; over this a piece of plaintain leaf, oiled silk, or gutta-percha tissue is to be laid, and the whole bandaged loosely.

Should the discharge become very free, and the wound smell, every second strip of plaster should be removed, and the wound syringed out twice daily with the carbolic lotion or carbolic oil. Should the edges Syringe with  
carbolic  
lotion. become red, livid, and pouting, the discharge being copious and offensive, it is better to remove all the dressings, and apply a large poultice with which powdered charcoal has been mixed. When once again A poultice  
may be  
necessary. healthy in appearance, that is of a bright red colour and presenting a clean surface, water-dressing only should be applied.

CHAP. LI. 3. *Punctured wounds*, that is, wounds which are produced by sharp, long, narrow instruments penetrating the flesh, such as might be produced by treading upon a nail, or falling upon a splinter of wood, are often troublesome. The great thing is to allow the orifice to remain completely and freely open, not necessarily to the air, but for the free discharge of matter. Of course, should any portion of a foreign substance remain imbedded in the wound, every endeavour should be made to remove it with the forceps, the orifice being enlarged for that purpose if necessary. Carbolic lotion should then be injected into the wound, and a large poultice applied; and when healing, a folded piece of lint, saturated with carbolic oil (25), should continually but loosely cover the aperture.

Allow free exit to matter.

Inject carbolic lotion.

Poultice.

Carbolic oil.

#### (4) BURNS AND SCALDS.

Great constitutional shock.

*Burns and Scalds*.—A severe burn or scald is chiefly dangerous on account of the shock it occasions to the whole system. The great pain is accompanied with violent shivering, a pallid face, and cold hands and feet.

Dangerous situations and times.

The amount of danger to be apprehended from an injury of this kind is dependent of course upon its extent, but the depth to which it has penetrated is also of importance. The nearer burns are to the centre of the body the greater the danger, and the most dangerous period is the first five or six days after the accident. But it is not only the immediate danger that is to be considered; there are others of a more remote nature to which the accident renders the child

Remote dangers.

unduly liable ; these are ulceration of the bowels on about the tenth day, producing most serious inflammation of the abdomen ; and inflammations of the head or chest, which may occur a little later on.

In treating a burn there are three matters requiring Treatment, immediate attention, viz., to relieve the pain, to counteract the shock, and to protect the injured surface from contact with the air. If the patient be seen immediately after the accident, give a dose of wine Administer a into which laudanum to the extent of one drop for stimulant with opium. each year of age has been put. Then deluge the parts with carron oil (which is made by shaking together Apply carron equal parts of lime-water and any bland oil, such as oil. sweet or linseed oil, till they form a thick white emulsion) ; or should there be any delay in obtaining this, dust the parts thickly over with flour. Which- Or flour. ever application is used, the whole parts should be at once enveloped in large quantities of cotton wool, kept With cotton wool. in position by very lightly-applied bandages.

Should flour have been employed, it is well to Carron oil to be preferred. prepare the carron oil at leisure, and to apply it subsequently, because when the blisters burst, their fluid mixing with the flour forms a hard, dirty cake, which is difficult of removal.

The child should be put to bed as soon as possible, Warmth. with hot bottles wrapped in blankets applied to his feet and sides. More wine may be administered if the shivering and depression continue, and as soon as possible a little warm beef-tea may be given. More stimulant if necessary. Beef tea.

The greatest gentleness is required in handling the child lest the injured surface be abraded. The clothes should be removed by cutting them off with a pair of scissors, if undressing would at all disturb the patient. Cut off the clothing.

## CHAP. LI.

Prick the  
blisters.

Length of  
time the first  
dressings to  
remain on.

Mode of  
dressing.

Caution as to  
over-stimula-  
tion.

Subsequent  
dressings.

Proud flesh.

Position of  
the limbs.

When blisters appear they are to be pricked with a needle, great care being taken not to remove the elevated skin.

The first dressings are not to be removed till necessity obliges for cleanliness sake; every time the surface is dressed, there is, of necessity, a fresh exposure to the air, the very thing we wish to avoid. In removing the dressing, if the surface injured is extensive, the removal and renewal should be done piece-meal. The less often the burn is dressed the better; and before the old dressings are removed the new ones ought to be quite ready to be put on.

It may be necessary to repeat the administration of stimulants once or twice within the first twenty-four hours, but reaction will by that time probably have been fully established, and therefore we must be very guarded in the exhibition of wine lest the excitement produced prove injurious.

The caron oil may be employed till the healing be well advanced, when the zinc ointment (17) or resin ointment (21) may be substituted for it, an occasional change for a day or two to a turpentine application (22) being often beneficial.

Should proud flesh, elevated above the line of the skin, form, such places should be touched lightly every second day with the solid bluestone (sulphate of copper). The liability to contractions occurring during the healing of a burn should always be kept in mind. A limb should invariably be bandaged in the straight position.

Mr. Swain considers the *collodium flexible* of the Pharmacopœia to be "by far the best local application for burns. This should be painted on smoothly with a

large brush. It will frequently prevent vesication, if it has not already taken place. If there are vesications the serum should be let out through small openings, and the surface painted over with collodion."

### (5) SPRAINS.

A sprain is a twist of a joint, which stretches and Nature. perhaps partly tears the ligaments which bind the bones together.

Upon the occurrence of the accident there is a Symptoms. sickening pain experienced, and there is inability to bear weight upon the limb; swelling succeeds, and perhaps the skin becomes "black and blue." If a sprain be neglected, chronic inflammation of the joint <sup>May inflame</sup> joint. may succeed, which may result in permanent stiffness of the part.

The great principle upon which a sprain is to be Treatment. treated is, rest. As soon as possible after the accident, immerse the injured foot or hand in a basin of hot water for ten minutes, and then in a basin of cold water for a similar period. Then apply a wet bandage rather tightly from the toes or fingers well up beyond the injury; put the child to bed, and insist upon the most perfect rest. The bandage should be wetted at intervals with water or the arnica lotion as for a bruise, and a plantain leaf applied over all to prevent its becoming dry too rapidly. When all pain and inflammation have subsided, the joint should be rubbed with a stimulating liniment. Caution should be observed in allowing the child to resume play.

## CHAPTER LII.

### SNAKE-BITES, STINGS OF INSECTS, AND BITES OF ANIMALS.

CHAP. LII. —  
Not so invariably dangerous as supposed.  
Fayrer's directions.

“SNAKE-BITES are always productive of alarm, but they are more rarely dangerous than is supposed, because they are generally inflicted by innocent snakes” (Ewart).

The following remarks as to treatment are summarized from Sir J. Fayrer's work:—

(1) Apply ligature.

Twist with stick.

(2) Three other ligatures.

(3) Scarify.

(4) Burn the wound.

(5) Suck the wound.

(1) Apply at once a ligature of cord around the limb, about two or three inches above the bite. Introduce a piece of stick under the ligature, and by twisting tighten it as much as possible.

(2) Apply two or three other ligatures above the first one, at intervals of a few inches, and tighten them also.

(3) Scarify the wound, by cutting across the tooth-puncture to the depth of a quarter of an inch, and let it bleed freely.

(4) Apply either a hot iron or live coal to the bottom of these wounds, or explode some gunpowder upon the part, or allow a few drops of pure carbolic or nitric acid to fall into them.

(5) If the patient himself, or any one else, will suck the wound forcibly, while the fire or caustic is being obtained, so much the better.

(6) If the bite be on a part where a ligature cannot be applied, pinch up the skin over the bite, and cut out a circular bit as large as the finger-nail, and from <sup>(6) If ligatures impossible, cut out part</sup> <sub>and burn.</sub>  $\frac{1}{4}$  to  $\frac{1}{2}$  an inch in depth. Then to the raw surface apply a live coal, or a caustic as stated, or explode gunpowder in it.

(7) Keep the patient quiet, but administer brandy and sal volatile every quarter of an hour, to the extent of three or four doses. Intoxication should not be induced.

(8) Should no symptoms of snake-poisoning appear in half an hour, the ligatures should be relaxed, or the parts will mortify from the strangulation. If, however, poisoning symptoms appear, the ligature should not be relaxed until the patient is recovering, or the parts become cold and livid.

(9) If the patient becomes low, apply mustard poultices and hot bottles. Encourage and cheer the patient, stimulate him throughout. Keep him quiet, and do not make him walk about.

Fayrer has recorded many instances where serious symptoms of prostration have been wholly due to fear, the snake which had inflicted the bite having been killed and proved to be harmless. There is, too, another hope: an exhausted snake, one which has recently bitten at other objects, is but feebly poisonous for the time, though perhaps deadly by nature.

"The measures suggested are, no doubt, severe, and not such as under other circumstances should be entrusted to non-professional persons. But the alternative is so dreadful that, even at the risk of unskilful treatment, it is better that the patient should have this chance of recovery."

## STINGS OF VENOMOUS INSECTS

In young children may not be altogether unattended with some danger.

Treatment.

Extract the sting if it can be seen, suck the wound, and then apply a plaster made of ipecacuanha powder and water. Sal volatile and brandy may be given if there is faintness.

## BITES OF ANIMALS.

Needless alarm.

But a very small proportion of dogs or other animals which bite people are affected by hydrophobia; and even of all persons who have been bitten by undoubtedly rabid animals, not half suffer from hydrophobia.

When a bite is inflicted through clothing, it is not nearly so dangerous as when a naked part has been bitten.

Animals liable to hydrophobia.  
Dog should not be killed.

The dog, the jaekal, the wolf, the eat, and the fox are the only animals known to suffer from hydrophobia. A dog which has bitten a person should not be killed at once, because it will then be impossible to determine whether the animal really was or was not mad at the time of the attack,—a matter which may be decided very soon if the dog be tied up and allowed to live.

Treatment.  
Suck the wound.  
Ligature.  
Burn or caustic or excise the part.

Immediately after the bite the wound should be well sucked. Caustic should then be applied, a little water dressing put on, and no more thought of the matter. If, however, there be evidence that the dog is mad, and if the patient be seen immediately, the best thing to do is to proceed precisely as directed under Nos. 3, 4, 5, and 6, for the treatment of snake-

bite, except that the ligature need not be kept on longer than after the application of the cautery or caustic, nor is it necessary to apply more than one ligature. A thin stick of caustic inserted directly into the bite down to its bottom is an excellent proceeding. A stout iron wire, heated and driven to the bottom of each tooth wound, is also an effectual mode of cauterising the wound. It must be recollected that the wound is much deeper than that inflicted by the snake, and that, therefore, the incisions must be deeper, and the caustic very effectually applied.

The caustic  
must pene-  
trate to the  
bottom of  
wound.

## CHAPTER LIII.

### FRACTURES.

CHAP. LIII.

—  
Signs of  
fracture.

A BONE is known to be fractured when there is unnatural mobility in its length, when there is such deformity of the limb as could not occur unless the bone were broken, and by the sensation of grating produced by the broken ends rubbing together when the limb is grasped both above and below and slight movement made.

Caution as  
to movements.

When it is suspected that a bone is broken, the greatest care must be taken, lest by incautious movements one of the ends be made to penetrate the skin.

Management.  
At moment of  
occurrence.

The moment after the accident the limb should be gently drawn down; and if the patient is at any distance from home, a dozen or so straight bamboo twigs should be cut and rolled in grass or pieces of cloth (a native's puggary, for instance, torn into pieces), and placed at intervals around the limb, and there secured by tying them with a couple or three pocket-handkerchiefs moderately tight. This done, the child may with safety be carried home, and a surgeon summoned. The straw cases in which wine bottles are usually packed, serve excellently for these temporary splints, one being placed at either side of the fracture.

Assuming that it be not possible to obtain surgical aid :—The child having been placed upon a perfectly level and rather hard bed, an assistant should grasp the sound part of the limb above the fracture, while the operator gently and slowly but firmly pulls from the lower end in the straight direction of the limb, that direction which is natural to it, all jerking being avoided. The limb is thus brought into its natural position, a fact which may be verified by comparison with the opposite limb. The sooner after the occurrence of the accident that reduction is made the more easy will it be of accomplishment.

The next step is to retain the injured limb in the natural position to which it has been reduced, by means of splints which must be sufficiently firmly applied to insure immobility while pressure on prominent points must not be too great. The most simple form of splints consists of pieces of thin light board cut to about the length of the broken bone. One of these well padded should be placed at either side of the broken limb, and if desired a third may be placed behind for it to rest upon. With three straps or pieces of bandage they should be bound firmly, but not too tightly, in position around the limb.

If the broken bone has been reduced to perfect position, and if it be, during the remainder of treatment, retained in this position without the possibility of any movement, nothing further is required; nature will do the rest.

It may be necessary to tighten the straps or bandages from time to time; but the splints should not be removed, or even loosened, for ten days or a fortnight, and not even then except in case of necessity. It will

Splints not moved till union has taken place.

CHAP. LIII. be necessary to wear splints for about three and a half weeks.

Inflammation subdued by cold or irritation.

Inflammation in the neighbourhood of a fracture is to be subdued by the application of cold lotions, or ice, or by irritation (that is, a basin of water is to be placed on a stand higher than the limb; into the water is put a skein of cotton, which is allowed to hang over the edge; the water will drop rapidly from the cotton upon the part, producing great cold).

Many fractures require special treatment.

These directions are of the simplest nature; many fractures require special apparatus, but the limits here available do not permit of more than the most general allusion to the subject. In all cases it is very desirable that a surgeon should inspect a fracture as soon after its occurrence as possible, even though a few days should have to elapse.

Compound fractures.

A compound fracture, that is, when the broken bone has penetrated the skin and made a wound which communicates with the break, is to be treated in the same way—by reduction and splints—the wound being treated upon general principles (*see* wounds).

## CHAPTER LIV.

### INJURIES OF THE HEAD.

CHILDREN bear blows upon the head with extra- CHAP. LIV.  
ordinary impunity as compared with the adult. Not so serious

A severe blow will render a child giddy and confused, or it may completely stun him. A very severe blow may produce insensibility of a most serious nature, the child lying cold, clammy, and pale, with a feeble, slow pulse, and an eye insensible to light. After a time, varying with the force of the blow from a few minutes to perhaps several hours, he begins to revive, the skin becoming warmer and the pulse stronger. Then vomiting, which is always a good symptom, sets in, and sensibility gradually returns. Of course improvement may take place, the patient may go on from bad to worse, or there may be partial recovery, succeeded by symptoms of inflammation of the brain (*see Head Symptons*, p. 313). Symptoms of  
concussion.  
Trivial and  
severe.

At first the child should be laid in a warm but well-ventilated place, mustard plasters should be applied to the calves of the legs, the arms and body should be rubbed with brandy or turpentine or a stimulating liniment (18). A couple of grains of calomel are to be placed upon the back of the tongue, a purgative *Purge*, enema (44, 45) administered, and cold applied to the *Cold to head*. Treatment.  
Initiate re-  
action.

CHAP. LIV.

Upon revival  
a warm drink  
but no  
brandy.

Aperient.

Quiet in dark  
room.

Purgings.

Subsequent  
precautions.

So soon as symptoms of revival set in, give a warm drink of tea or milk, to which a little sal volatile may be added, or the latter may be given alone. Do not administer brandy or wine. An aperient powder (56) may next be given, and the rest of the treatment resolves itself into perfect quietude in a darkened and cool room, a very light and simple diet, preserving the bowels in a state of laxity, and keeping cold to the head, until the child has completely revived. For some time subsequently care should be taken to prevent the child joining in active or boisterous play, to keep the bowels open, to avoid exposure to the sun, and to maintain a simplicity of diet.

Should inflammation of the brain occur, the treatment should be conducted as laid down on page 316.

## CHAPTER LV.

### ACCIDENTS WITH FOREIGN SUBSTANCES.

#### (1) SWALLOWING FOREIGN SUBSTANCES.

MARBLES, plum-stones, and such like rounded substances are frequently swallowed by children, but such an accident need not cause any alarm. The substances thus swallowed will become impacted in the fæces and pass with the ordinary stools. In these cases it is not a good plan to give aperient medicines ; on the contrary, a diet of a constipating nature ought to be adopted, so that the substance may become impacted and thus carried along the bowel. Purgatives delay the expulsion by rendering the fæces so fluid that they pass over the heavier substance, which subsides and remains stationary.

CHAP. LV.

Rounded substances not serious.

Avoid purgation.

A button, a copper coin, or other substance which is likely to produce harm because of its nature, may safely be removed by an emetic, if we learn of the accident immediately after its occurrence, and sulphate of zinc (41) is the best medicine then to give, but mustard will also answer very well (p. 387). If too long a time has elapsed to allow of the emetic being of use, we must treat the case as above, on the constipation plan, astringent medicines being employed.

Otherwise encourage constipation.

CHAP. LV.

if necessary. The chances of injury ensuing will then be very slight.

A pin swallowed.

It is a common occurrence that a pin placed in the mouth, accidentally slips down the throat. "Not unfrequently this happens with children; and the mother, in her anxiety to do something, immediately doses the little patient with castor oil, and *then* seeks medical advice. In such an accident it is far better to avoid purgatives; and rather allow the patient to eat plentifully, so that the foreign body may have the best chance of being carried through the intestinal canal, imbedded in and surrounded by faecal matter. It were better to encourage constiveness than establish relaxation of the bowels" (Geo. Pollock).

Encourage constipation.

When a substance sticks in throat.

Use forceps.

Or finger,

Or emetic.

Happily infrequent.

Should it happen that any substance has stuck in the back of the throat, the occurrence will be notified by immediate symptoms of distress and alarm. In such a case the child should be placed with its face to a good light, its mouth having been opened, a piece of cork or wood should be placed between the back teeth and the substance looked for. If it can be seen, it may be grasped with a forceps and removed. If it is not visible, it should be felt for with the finger passed well down the throat, and if detected it may be worked loose if it be a small object such as a fish-bone or the like; or sickness may be induced by putting the finger down the throat, and thus the offender may be rejected, or an emetic (p. 387) may be given with the same object.

## (2) FOREIGN SUBSTANCES IN THE AIR-PASSAGES.

Instead of passing into the gullet or stomach passage, the substance may enter the windpipe or

passage to the lungs. Fortunately the air-passage is so CHAP. LV. effectually guarded by a peculiar valvular arrangement Most serious. that such accidents are not common, but they are always serious.

There is, when the accident happens, an immediate Symptoms. sense of impending suffocation, the difficulty of breathing may be most intense, and a spasmodic cough occurs. Sudden death may possibly happen. When the substance has taken up its permanent position a calm ensues, and the subsequent symptoms will depend upon the position occupied; but they are sure to be very distressing, and fraught with great danger.

Unfortunately there is nothing that can be relied Treatment. upon as efficient treatment within the power of the parent. Instantly a surgeon should be informed of Send for the occurrence, with a view to his performing an surgeon. operation if necessary.

In the meantime place the child upon its back upon Invert the body. a small table, and standing at its feet, grasp them against the edge and turn the table over, the child's head being thus downwards, till nearly at right angles to the ground. When in this position let an assistant endeavour to excite vomiting by passing a feather Excite vomiting. into the throat; and then turning the child partly over, while still in the hanging position, let him be slapped firmly upon the back. These measures Slap the back. failing, after a full and fair trial, it is best to put the Do not at-tempt too much. child to bed in whatever position it seems most at ease, and await the surgeon's arrival.

### (3) FOREIGN SUBSTANCES IN THE EAR AND NOSE.

Foreign substances should be removed from either of these situations, provided no pain be occasioned to

CHAP. LV.

Violent  
efforts  
unjustifiable.

the patient in doing so. "When it is remembered that if left alone the foreign body generally becomes loosened, and escapes without surgical interference of any kind, we have a very strong argument against the adoption of any means involving suffering" (Holmes Coote).

The ear tube.

Danger of  
pushing  
past the  
narrower  
part.No need for  
hurry, there-  
fore only  
gentle efforts  
to be made.

The *ear tube* is widest at its outer part, it narrows in the centre, and as it approaches the drum it again becomes wide. As a child seldom manages to introduce a substance beyond the narrower portion, great care must be taken not to thrust it further back in the efforts at removal, for not only is the difficulty of extraction then greatly increased, but by pressing upon such a delicate membrane as the drum, ulceration and penetration may possibly occur, and the substance passing into the internal ear may there cause inflammation, or even disease of the bone of the skull.

With forceps.

Position.

Syringing.

Seeing that such serious consequences may possibly happen, and that nevertheless there is not the slightest need for hurry or alarm as to immediate consequences, the best plan, when far from medical aid, is to make gentle efforts to remove the substance, and, these failing, to send the child to a surgeon. If the substance is visible, and if it presents a rough surface which can be grasped, it may be extracted with the forceps. In the case of a small and round substance, the effects of position may as well be tried, by placing the child upon its side upon a table, and then raising the legs of the feet end about one foot from the ground. Neither of these simple plans succeeding, it is better to restrict further efforts to the use of the syringe. First drop some oil into the ear, and insert a small pledget of cotton, saturated with oil, gently into the

orifice. Three or four hours having elapsed, the wax will have become softened ; then some warm soapsuds are to be injected with moderate force, rather in the upward direction, in the hope that the stream getting behind the substance will force it out of the ear, as it very frequently will do.

Foreign substances in the *nose* cannot excite the same dangers as in the former situation. "Let it be remembered that, in children especially, there is no cause for anxiety or haste ; the extraneous body will work its own way out, the surrounding parts receding so as to widen the passage by which it entered" (Holmes Coote). A discharge from the nostril must of course occur, and it will probably be of a fetid, mattery nature. Unless the substance can be grasped, and removed by the forceps, it is better to wait quietly till the services of a surgeon are obtained. There is not the slightest need for hurry.

The nose.  
The substance will loosen itself.  
If not removable by forceps do not interfere further.

## CHAPTER LVI.

### RUPTURE.

#### CHAP. LVI.

#### Definition.

By rupture is meant a protrusion of a portion of intestine through the muscles of the belly, causing a soft swelling underneath the skin.

#### Varieties.

There are two common localities of rupture—(1) at the navel, and (2) at the groins. Children are often born with ruptures.

#### 1. Navel rupture.

Either at the time of birth or shortly after the separation of the navel-string, a soft, round swelling may be observed at the navel. The swelling subsides when the child is placed upon its back, but a fit of crying or sneezing will cause it to reappear. Gentle pressure with the fingers will push back the protrusion out of sight, and then probably the circular edge of the opening through which it has passed may be felt with the tip of the finger. There is no pain of any kind.

#### Groin rupture.

Groin rupture is usually confined to male children. The mother notices that the scrotum of her infant is of unusual size, that it is soft, compressible, and often semi-transparent. At times, when the child is at rest, the swelling wholly disappears, again to show itself when he cries.

There is usually no danger attending these cases

in infancy, but if not then cured by simple mechanical means, they are apt to remain permanent throughout life, a remark which especially applies to groin rupture; and they are sure ever afterwards to be a source of continual annoyance, and sometimes probably of actual danger.

The treatment of navel rupture is simple. A pad made of a flat piece of thick gutta-percha or solah, covered with two or three folds of linen, should be secured to the centre of an elastic binder, and should be continually worn night and day around the belly: this is all that is required. A convex pad should never be used, because, although it pushes the bowel back more effectually, it at the same time pushes into and enlarges the opening, instead of helping to close it. After a few months recovery will probably be complete, the aperture having closed up.

A groin rupture is not so simply managed. Here there is no need for great hurry, and therefore, even if there be a delay of a few weeks, it is better to wait for the opinion of a surgeon, because there are one or two easily-cured affections of the parts involved which closely resemble rupture,—so closely that the mother may not be able to discriminate. A long delay should never be permitted, because it is only during infancy that cure without operation is possible. If the case is pronounced to be rupture, the instrument maker will, upon the precise measurements, &c., being supplied to him, furnish a proper truss, an apparatus which is essential to efficient treatment.

CHAP. LVI.  
—  
Prospects.

Treatment.  
1. Navel rup-  
ture.

Properly  
arranged pad.

2. Groin  
rupture not  
so easily  
managed.

Surgeon's  
opinion to be  
obtained.

Curable dur-  
ing infancy  
without  
operation.

## PART IV.

### On the Administration and Application of Remedies to Children.

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#### CHAPTER LVII.

##### ADMINISTRATION OF REMEDIES.

CHAP. LVII.

Medicines  
may usually  
be supplanted  
by dietetic  
and other  
means.

In childhood,  
drugs speci-  
ally powerful.

Patent  
medicines.

IT has often been said, and with great truth, that the less medicine children take the better. A carefully regulated diet, together with attention to the other details of general hygiene, are the surest means of attaining this desirable end. As a matter of fact, drugs are very seldom necessary, in any form, throughout childhood, if the general management be good.

But drugs and proper medical treatment are especially powerful for good in the sicknesses of childhood. Very many of the diseases of early life may be arrested by the simplest means, if taken in time.

*Patent* or other medicines of unknown composition should never, under any circumstances, be given to a child. Only drugs which may be administered with absolute safety should be thought of.

Whatever medicine is considered necessary should be made to occupy the smallest possible bulk, and

pains should be bestowed upon making it as little CHAP. LVII. objectionable in taste as is compatible with its nature. Medicine

small in bulk.

*Opiates* are especially dangerous in the case of Opiates. *infants*; so much so that the amateur should never, Danger of. under any circumstances, give even the most minute dose of any opiate in any form to an infant under six months of age, and after that age *only* as directed in the foregoing pages, where it will be observed that on every occasion upon which opium is recommended, a special caution as to the exact dose and mode of administration is inserted. Godfrey's Cordial or Patent *Dalby's Carminative* should never be permitted with- "soothing" medicines. in a nursery. They, and other preparations of the same class, contain opium.\*

*Mercury* is only recommended in one form and for *Mercury*, one purpose, namely, calomel, in a moderately purgative dose. No other preparation of mercury for this or any other purpose should ever be used by non-professional persons. Grey powder, which is, or was, such a favourite in the nursery in England, is especially to be avoided in India, because under the influence of climate it becomes changed in its nature into an actively poisonous substance.

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\* "Godfrey's Cordial is made of infusion of sassafras, treacle, and tincture of opium. It contains about one drachm of the latter in six ounces, or half a grain of opium in an ounce. Half a teaspoonful has been known to cause the death of an infant. Dalby's Carminative is composed of essential oils, aromatic tinctures, carbonate of magnesia, and tincture of opium. It contains one-eighth of a grain of opium in every ounce. Forty drops have been known to kill an infant. Half a teaspoonful of Paregoric Elixir has been fatal to an infant."—SWAIN'S *Surgical Emergencies*.

## CHAP. LVII.

A few words concerning the remedies advised in these pages may be here inserted with advantage:—

## Alteratives.

“ALTERATIVES are medicines which promote secretion and exhalation generally, soften and loosen textures, check inflammation, lessen inflammatory effusions, and promote re-absorption” (Tanner). In fact, they are remedies which change diseased action by acting on the blood. Only three alterative prescriptions have been included in this book, and concerning them there is no need for further instructions than those entered under each. Of course the dose of any medicine containing arsenic must be carefully regulated, and care taken that it be administered immediately after food.

## Applications.

A number of APPLICATIONS are mentioned, the mode of employment of each being explained in the text. There are, however, a few others, which perhaps need some comment. Poultices, for instance, are frequently employed. Before any poultice is applied, the skin should be oiled to prevent sticking. A pure mustard poultice should never be applied to a young child; it is too strong, and is likely to blister, and therefore should be diluted with twice or three times its quantity of flour or linseed. The effect of this remedy in relieving abdominal and chest pain is extraordinary, and can hardly be accounted for by the fact that the temporary congestion of the skin draws away blood from the neighbouring affected part. About a quarter of an hour is a sufficient time for a diluted mustard poultice to remain on. A linseed poultice prepared with  $\frac{1}{3}$  to  $\frac{1}{2}$  of its quantity of mustard, may be retained for some hours.

## Mustard poultices.

## Caution as regards arsenic.

The linseed or other simple poultice may be applied to the surface after the removal of the mustard poultice, to perpetuate its action, or it may be employed alone. A linseed poultice retains its warmth longer than a bread poultice.

Neither blisters nor leeches should ever be applied to a child except under direct medical advice.

Violet powder or a dusting powder of some kind is necessary as an application to the child's skin, particularly in India. The common corn-flour makes an excellent dusting powder, but a combination of oxide of zinc and powdered starch is the most useful of all (11). Ordinary violet powder obtained from a respectable chemist answers all purposes admirably, but it is not a good plan to purchase the article from the box-walla, for it has been proved that adulteration in its worst form has of late included violet powder. Professor Foster discovered no less than  $4\frac{1}{2}$  grains of arsenic in 100 of some powder purchased from "a respectable chemist in the north of London" (*Lancet*, May, 1878), and shortly before that a wholesale poisoning through skin absorption occurred in London.

Hot-water fomentations are very useful in many cases. The water should be as hot as the patient can bear it. Two thickly-folded and large flannels should be used, one being removed from the hot water and wrung out should be applied to the part; after an interval of two or three minutes the second should be similarly applied upon the removal of the first, and the process continued for half an hour if possible.

Turpentine stupes may be applied by sprinkling a little turpentine upon the flannels when they are wrung out of the hot water, before application, as above.

## CHAP. LVII.

Cold and  
Uncions.Throat applica-  
tions.

Of the application of cold to the surface of the body enough has already been said (p. 164); oily frictions to the skin have also been alluded to at page 168.

In making applications to the throat, a large soft camel's-hair brush, securely fixed to its handle, should be used, and it should be pushed well down the throat, while the head is thrown well back, deliberately and cautiously, with a rotatory motion, so as to distribute the application to all the parts.

**Vapour bath.** The vapour bath is valuable in cases of dropsy. The child, quite naked, should be seated upon a cane-bottomed chair; a blanket, reaching to the ground on all sides, should then be thrown around the patient, and tied at the neck, so as to leave no aperture. A "*chattie*" or other open vessel of boiling water having been placed under the chair, sweating soon commences, and it should be kept up for a quarter of an hour at least. The child should then be rapidly and thoroughly dried, and put into a warm bed.

**Hot and warm bath.** A hot bath usually has a temperature of about 104°, and the warm bath a temperature of 98° or 100°. To be of use, the water should be deep enough to reach to the child's arm-pits. It is not of any consequence whether drying be effected completely, but it is important that it be done rapidly. The child should be wrapped in a blanket and put to bed, whether with or without his nightdress matters not, but a garment should be warmed previously to being put on. Irritation and pain are thus subdued, and probably perspiration induced.

**Mustard bath.** A mustard bath is used in certain cases of threatened collapse. It is prepared by using mustard in the proportion of one ounce to each gallon of warm water.

To ensure equal diffusion, the mustard should first be made into a paste and placed in a muslin bag, through which it should be squeezed into the water.

CHAP. LVII.

ANTHELMINTICS are medicines which have been proved to possess the power of destroying the life of intestinal worms. That remedy which is poison to one kind is harmless to another, hence the absurdity of the so-called worm tablets, lozeniges, &c.

ANTISPASMODICS and SEDATIVES are most important medicines. Of this class the bromide of potassium is a most effectual and at the same time perfectly safe medicine for the parent to handle. With it harm can hardly be done, unless there be utter recklessness and disregard of the effects it produces. Strictly speaking, it ranks more as a sedative, a guardian against spasm, rather than a means of relieving it on the moment. Chloral is a most powerful sedative, but it is one which must be used with caution; the dose advised in prescription No. 8 is perfectly safe, and it is one which may be repeated after six or eight hours if there is necessity. When given in combination with bromide of potassium it acts more powerfully. Ether is a pure antispasmodic; the sulphuric ether (called also spirits of ether) in doses of 3 to 6 drops to a child; the spirits of chloroform (also called "chloric ether") is another preparation of ether, of great value and power as a stimulant antispasmodic: it may be given in doses of 1 to 2 drops to a child a year old.

The ordinary sweet spirits of nitre is another and excellent antispasmodic when given in doses of five to ten minims. It also acts as a sweat-producer and urine-increaser, as will be presently shown.

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**Carminatives.** CARMINATIVES are most useful for flatulency, and when combined with aromatics and soda they are of great value, both in colic and certain kinds of diarrhoea. Some formulæ have been inserted to enable the parent to make suitable carminative fluids from bazaar sources; but the distilled waters, as obtainable from the chemist, are always to be preferred.

**Astringents.**  
Much abused.

ASTRINGENTS constitute one of the best known and most abused of all classes of remedies. They vary much in their mode of action, and consequently the kind of case for which it is proposed to employ an astringent must always be carefully discriminated before its administration; for instance, chalk acts mechanically by coating the delicate mucous membrane, and thus protects it, and it is also an antacid; therefore when the actual irritant is removed, chalk acts beneficially. Gallic acid, on the other hand, is a pure and direct astringent, contracting the smaller vessels, and preventing them pouring out fluid; hence it is used in violent watery discharges from the bowels, and to check bleeding. Similarly catechu is a pure astringent, but not of equal power.

**Bael.**

Bael fruit is classed among the astringents, but it is almost more an alterative, its astringent powers being but slight. "In irregularity of the bowels, presenting alternations of diarrhoea and constipation, one draught (see prescript. No. 33) taken early in the morning often exercises a most beneficial effect in regulating the bowels," says Waring, who issues the following caution:—

**Spurious  
articles sold.**

"In bazaar specimens, the wood-apple (fruit of the *Feronia elephantum*) is often substituted for Bael. Though they bear a

close resemblance externally, they can easily be distinguished CHAP. LVII. by opening them. In the true baol there are in the centre of the pulp a number of cells, from five to eighteen each, containing one or more seeds and glutinous mucus, whilst in the wood-applo there are no cells, and the seeds are embeddod in the pulp."

When the fresh fruit is not procurable, the liquid Extract of Bael or the Dietetic Bael can be obtained from the chemist.

Ice is useful as a local astringent. It should be tied in a bladder, and so applied. In its absence the <sup>Ice and freezing mixture.</sup> freezing mixture may be substituted with nearly equal results (35).

DIAPHORETICS create perspiration. It is seldom Diaphoretics. that a very young child perspires freely under any treatment or during any sickness. There is moisture, Child seldom perspires freely. but not perspiration. By promoting the skin action, Action of. internal congestions are obviated, and the circulation thereby relieved. The warm bath used in conjunction with this class of medicine much helps their action.

The most common, and perhaps the most useful Assisted by warm bath. diaphoretic, is the sweet spirits of nitre, in doses of from five to ten drops every few hours to a child a year old, and twice that quantity to a child who is above two years. It should never be given undiluted, and usually it is combined with other medicines, which experience has proved to assist in producing the desired end. The amount of urine secreted is also considerably increased by the use of the sweet Sweet spirits of nitre. spirits of nitre (otherwise called "spirits of nitrous ether").

Common saltpetre or nitre, or nitrate of potash, is Nitre, a valuable diaphoretic, and it has the advantage of

CHAP. LVII. being obtainable in the bazaars, under the name of shórá. To be fit for internal use it should be pure, in large white colourless masses ; and possess a saline cooling taste.

How to purify it. If impure, " to fit it for internal use, it should be purified by dissolving it in boiling water, removing the scum after the liquid has been allowed to settle, straining the solution through calico, and setting aside to crystallise " (Waring.)

Mindererus spirit.

The solution of acetate of ammonia is the old and well-known " spirits of mindererus," a bland and efficient diaphoretic, which may be given in doses of from twenty to sixty drops, but it is never prescribed alone.

Emetics.

Uses.

EMETICS are medicines which are used to produce vomiting. They are given when we wish to empty the stomach of its contents; to depress the patient temporarily, and to augment secretion and excretion. Emetics are precluded when there is great debility. This class of medicines is especially useful in the diseases of children, because so much less distress results from their employment than in the case of the adult.

When precluded.

Cause little distress in children.

How to administer. Time.

Value of.

Unless there is urgency, and that immediate vomiting is desired, an emetic should not be given in too large a dose at first. To obtain the full effect it is best to repeat the dose every ten or fifteen minutes till vomiting is induced, and it is also desirable to administer it before the usual hour of rest, because the sleep and perspiration which follow the action of the medicine are thus perpetuated ; but, of course, it is not always that there is choice in this matter.

At the beginning of croup, when convulsions are threatened, and in commencing inflammations of the

lungs, emetics are invaluable; so in bronchitis and CHAP. LVII.  
obstruction of the throat with mucus, in croup and  
whooping-cough, &c.

The most common emetics are ipecacuanha, mus- The most  
tard, alum, sulphate of zinc, and sulphate of copper. common.

Ipecacuanha is an universal medicine. In the case Ipecacuanha.  
of infants it is best to employ the powder, but for  
older children the wine is more convenient: a grain of  
the former, or a teaspoonful of the latter, given every  
quarter of an hour till vomiting results, is the usual  
and best means of employing the drug. Ipecacuanha  
also assists expectoration, besides acting on the skin.

Mustard is a good stimulating emetic; it neither Mustard.  
causes depression at the time, nor leaves any behind;  
for this reason it is best suited to cases where the  
object is merely to evacuate the contents of the  
stomach, as in cases of poisoning, &c., and it is unsuitable  
to cases where we desire the physiological  
effects of emetics, viz., increased secretion, subjection  
of the pulse and nervous system, subjugation of the  
fever and depression. The bulk of the dose (a tea-  
spoonful in half a tumblerful of luke-warm water) is a  
great objection to its employment for children—in fact,  
it is only adapted for elder children.

In the absence of ipecacuanha, alum (phitkari Alum.  
of the bazaar) may be used as an emetic (see formula  
No. 39) of the non-prostrating class.

Sulphate of zinc in doses of a couple or three grains Zinc.  
dissolved in water may be given to a young child:  
double this quantity being required for children over  
three or four years of age, and it should be repeated  
every ten minutes while necessary. It is quick in its  
action, and does not occasion depression.

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Copper.

Sulphate of copper (41) is a powerful emetic, which is sometimes necessary in urgent cases, where milder drugs refuse to act or are not likely to act, and where it is desired to avoid depression. It is not in any way dangerous and it suits children very well.

Country

ipecacuanha.

Country ipecacuanha (anta-mul) is a good substitute for the imported article, though not so thoroughly to be relied upon. Waring speaks highly of it.

Caution as to

ipecacuanha.

There is no medicine that deteriorates more certainly than ipecacuanha under exposure. A fresh supply should be obtained every year.

Mudar.

Mudar is a native drug which has been entered under the head of emetics, though it is seldom or never employed for that purpose. For dysentery it is held in deservedly high repute.

Directions for  
collection of.

"The only part employed in medicine is the root-bark, and it is necessary carefully to attend to the subjoined directions for collecting and preparing it for medical use, a disregard of them having been, in some instances, the apparent cause of the failure of the remedy. The roots should be collected in the months of April and May, from sandy soils, and all particles of sand and dirt having been carefully removed by washing, they should be dried in the open air, without exposure to the sun until the milky juice contained in them becomes so far dried that it ceases to flow on incisions being made. The bark is then to be carefully removed, dried, reduced to powder, and preserved in well-corked bottles" (Waring).

Enemata.

Purposes of.

Cautions.

ENEMATA have been recommended in four different forms in the foregoing pages, viz., purgative, sedative, astringent, and nutritive. Whatever kind of enema be employed, it is important that no force whatever be used in the introduction of the tube, which should be thoroughly well oiled or greased, and introduced

with a gentle rotatory motion; the fact that the intestine slightly inclines to the left side being borne in mind. "For an infant at the breast an enema should not exceed one ounce in quantity: from one to five years, three or four ounces: and from five to ten or fifteen years, about six ounces" (Tanner). But these quantities are too small to ensure rapid action; they may safely be doubled. Sedative, astringent, and nutritive enemata must be of very small bulk, it being intended that they be retained by the patient. To To accomplish retention, select a time when the child is about to go to sleep, or after it has passed a motion: introduce the fluid, and upon withdrawal of the tube press with a folded towel against the fundament for a quarter of an hour or less, till the sensation produced by the introduction of the tube has passed away.

The sustaining effect of nutritive enemata, if properly and sufficiently frequently administered, is wonderful. By their aid a child may often be able to tide over an illness to which it would otherwise certainly succumb.

Opium administered by the bowel acts with greater power than when given by the mouth, wherefore it is a good plan to employ only half the usually prescribed quantity when it is contained in an enema.

**EXPECTORANTS** are medicines which increase the secretion of phlegm or mucus, which by being made thinner is more easily coughed up. This class of medicines acts with great certainty. They vary much in their nature: the depressing expectorants are given in the early stages of inflammatory affections of the chest: under this head are included ipecacuanha and

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2. Stimulant.

antimony. The stimulating expectorants are given in the latter stages of chest affections, and they include squills, senega, carbonate of ammonia, and one or two others. Judicious combination of these with various other drugs greatly enhances their action.

Paregoric  
elixir contains  
opium.

The compound tincture of camphor, or paregoric elixir, is a most useful expectorant of a sedative nature; but it contains a small proportion of opium, one quarter of a grain in every sixty drops, and therefore is to be used with great caution in the case of younger children.

Assafœtida.

Assafœtida ("hing" of the bazaars) is a good and useful stimulating expectorant, which may supply a want when other drugs are not at hand. By rubbing down in a mortar five drachms of assafœtida in a pint of hot water, straining and setting aside to cool, a mixture may be prepared, of which a teaspoonful may be given four or five times a day (Waring.)

Purgatives.  
Abuse of.

PURGATIVES are a much misused class of medicines; in childhood there are few things more pernicious than their constant administration.

Those most  
suitable.

For all ordinary purposes the child should be restricted to castor oil and rhubarb when an aperient is necessary; these medicines being mild and unirritating in their action. Some purgatives act with great violence, and if handled injudiciously may cause irritation bordering upon inflammation.

Fruits as  
laxatives.

Many fruits and simple and pleasant articles possess a laxative action, which will be made use of by a thoughtful parent before rushing to the medicine chest: such are figs, prunes, tamarinds, honey, treacle, and manna.

Rhubarb.

Rhubarb, in addition to its aperient properties, also

acts as an astringent after its purgative action has ceased, or when given in very small doses, its astringent action alone is exerted. Hence it is not to be used in cases of habitual constipation, and it is most valuable where we wish merely to empty the bowels and afterwards secure their quietude.

Senna is a good and simple aperient when we desire *Senna*. watery evacuations, but it sometimes gripes a good deal, wherefore it should always be mixed with an aromatic or carminative.

Castor oil is the blandest of all purgatives; it acts *Castor oil*. thoroughly without producing any irritation or flatulency.

Some of the other purgatives included in the *The more powerful aperients.* formulae are of a powerful nature, such as aloes, scammony, calomel, and podophyllin, and are only to be employed upon the occasions notified in the text.

Epsom salts, or sulphate of magnesia, is not a *Epsom salts.* medicine to be used frequently, except in special cases. It is too lowering in its effects. When the object is to withdraw watery fluid from the system, then it is very valuable.

**REFRIGERANTS** constitute a class of medicines which *Refrigerants.* give great comfort in fevers, allaying thirst, and cooling the body generally. Some of them are aperient in their action, a fact which should be remembered. Some being agreeable to the taste, there may be a temptation to use them habitually. Thus abused they are hurtful, and induce poverty of blood.

**STIMULANTS** of a medicinal nature are not much *Stimulants.* required in the treatment of the diseases of childhood. *Not much required.* They increase the force of the heart's action, and produce a feeling of warmth and energy temporarily. *Action of.*

CHAP. LVII. Ammonia, ether, and camphor are the chief stimulants which are employed in cases of exhaustion and debility.

Alcohol. Alcoholic stimulants are to be administered to children with great caution, because their too free use is succeeded by serious depression. In some affections of great exhaustion, as, for instance, violent watery purging, if used to excess, alcohol produces a narcotic depression, which greatly enhances the danger to the patient. Whenever the fontanelle (p. 150) is depressed, stimulants are always indicated. The white wine whey (receipt 8) is an excellent and very delicate stimulant for infants, particularly when the stomach is irritable. Brandy is valuable, but when combined with eggs (receipt 10) it forms a capital combination of food and stimulant. St. Raphael tannin wine is luscious and well suited to elder children—more palatable to them than the natural wines, it is a reliable and inexpensive preparation (*see also pp. 171, 186 and 192*).

Tonics.

Classified.

Action of.

TONICS are a very numerous class of drugs. They increase the tone or power of the nervous system, and are broadly divided into vegetable tonics and mineral tonics.

Some tonics, such as iron and cod liver oil, act more as food than medicine, as they are directly absorbed and improve the quality of the blood, whereby the body is better nourished. The mistake people make concerning this class of medicine is that they expect too immediate an action in the first place, for which reason tonics of this nature are often too readily abandoned; and secondly, they seldom continue them sufficiently long to allow of a permanent impression being made. As a rule, such medicines should be

persisted in for three or four months. From a stimulant we expect an immediate effect; from a tonic, never.

Iron or steel cause the motions to assume a black colour, darker than, though something like, that occasioned by bismuth.

Tonics should almost never be given to a child whose bowels are disordered; they are not then likely to be of any service, absorption being too imperfect. Some tonics, notably iron, may act as direct irritants, and increase the mischief in these cases. In short, they are medicines for convalescence, when they will increase the appetite, the force of the pulse, and the muscular strength.

Cod liver oil, as stated, is more a food than a medicine; but there is a very common mistake made regarding it, namely, that it is usually given in doses far too large. The stomach is capable of digesting but a very small quantity of this oil, and if more be given than the stomach can dispose of, the remainder passes off unchanged by the bowels, and it may then be both seen and smelt in the stools. "For a child under two years of age ten drops will be a sufficient dose at first. The quantity, after the first few days, may be gradually increased, but a careful watch must be kept upon the stools, and the appearance of any oil unchanged in the evacuations is a sign that the quantity must be reduced. For a child of this age we can seldom go beyond thirty drops for the dose three times in the day. If it be found to impair the appetite, or to interfere in the slightest degree with digestion, its use should be immediately discontinued" (Eustace Smith).

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Vegetable  
tonics.

Certain tonics, such as quinine and bark, act chiefly upon the nervous system, bracing up the body and increasing the appetite. Others, such as chiretta, hemidesmus, and gentian, act upon the stomach and digestive organs, and through them improve the general tone.

## SOME RECEIPTS CONNECTED WITH ALIMENTATION.

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### 1. *Lime Water.*

Add two ounces of slaked lime to one gallon of pure water, in a stoppered bottle, shaking well for several minutes. Allow the bottle to stand without any agitation till the superfluous lime is deposited at the bottom, the solution above being perfectly clear. The bottle should stand for twenty-four hours before the clear solution is drawn off for use. Water is capable of dissolving only a certain small proportion of lime, the proper proportion to constitute "lime water" being just as much as the water can dissolve.

A bottle containing lime water should always be kept well corked ; access of air spoils lime water.

### 2. *Saccharated Solution of Lime.*

Take of slaked lime one ounce, and of powdered white sugar two ounces.

Mix them carefully into a powder in a mortar. Transfer the powder to a bottle, and add one pint of water, shaking the bottle well.

The quantity required for each meal is from fifteen to twenty drops of the clear solution.

### 3. *Barley Water.*

Two teaspoonfuls of washed pearl barley, one pint of water.

Put into a saucepan, and boil down to two-thirds. Strain.

A whole day's supply should not be made at once. It soon turns sour. Once made it should never again be heated to boiling.

*4. Gelatine Solution.*

A teaspoonful of good gelatine or isinglass.

Half a tumblerful of cold water.

Mix. Allow to stand for three hours. Turn into a cup. Stand the cup in a saucpan half full of water, and boil till the gelatine is dissolved.

When cold this forms a jelly, of which a teaspoonful is to be added to half a bottleful of milk and water food to prevent curdling in the stomach.

*5. Beef Tea.*

Put half a pound or a pound of rump steak, cut up into small pieces, into a copper covered saucepan, with one pint of cold water. Let it stand by the side of the fire for four or five hours, and let it then simmer gently for two hours. Skim well, and serve.

The meat should be as fresh as possible—the fresher the better—and should be cleansed beforehand of all fat and gristle. If this precaution be neglected, a greasy taste is given to the beef tea, which cannot afterwards be removed by skimming. Iron saucepans if used, should be enamelled.

In re-warming beef tea which has been left to cool, care must be taken to warm the tea up to the point at which it is to be served, and no higher. It should on no account be allowed to boil. (Eustace Smith). Beef tea is a food stimulant, not a true food, and should never be wholly trusted to for nourishment in a prolonged illness.

*6. Juice of Raw Meat.*

Take a pound, or whatever quantity required, of the best rump steak, free from all fat. Cut it into the finest mince. Put it into a bowl. Add cold water, to which a few drops of diluted muriatic acid and a pinch of salt have been added, just sufficient to moisten the mass. Set aside to stand for four hours, during which time it may occasionally be stirred. Strain through a coarse cloth, using pressure. The pulpy mass of flesh ought to be nearly bleached, while the liquid should be of a port-wine colour.

*7. Raw Meat.*

The lean of steak or chop pounded in a mortar into a pulp and then strained through a fine sieve. It may be eaten as it is, or

diffused through jelly or broth. A dose of pepsine should always precede its consumption. A teaspoonful four times a day, may be increased to half a pound daily.

At first the motions become very fetid, but this soon passes off.

#### 8. *White Wine Whey.*

To a breakfast cupful of new milk in a saucepan, placed upon a fire, add a wineglassful of good sherry when the boiling point has been reached. Then boil again for one minute and strain off the curd. Sweeten with sugar. A feeble infant will take a tablespoonful every fourth hour.

#### 9. *Pancreatised Milk.*

Add a pint of boiling water to a pint of new milk. Then add two teaspoonfuls of Benger's *liquor pepticus*, and twenty grains of the bicarbonate of soda. Mix well, and put it aside in a warm, but not hot place for an hour, in a jug. Then pour it again into the saucepan and boil for two minutes. Sweeten to taste with sugar of milk.

#### 10. *Brandy and Egg Mixture.*

Rub the yolks of two eggs up with about half an ounce of sugar. To this add four ounces of cinnamon water, and finally four ounces of brandy.

Half to one teaspoonful as often as necessary for a child of a year old.

## PRESCRIPTIONS.

### ALTERATIVES. (p. 380.)

#### 1. Alterative and sedative.

Take

Iodide of potassium, twelve grains.  
Bromide of potassium, half a drachm.  
Water, one ounce. Mix.

Dose—One teaspoonful every third or fourth hour.

#### 2. Chlorate of Potash mixture.

Take

Chlorate of potash, one drachm.  
Water, three ounces. Mix.

Dose—Two teaspoonfuls every third or fourth hour.

#### 3. Alterative and tonic.

Take

Iron wine, half an ounce.  
Syrup of tolu, half an ounce.  
Fowler's solution of arsenic, twelve minims.

Dill water, one ounce. Mix.

Dose—One teaspoonful three times a day, after meals.

According to Erasmus Wilson, this is almost a specific in eczema of children.

Or,

Cod liver oil, two ounces.  
Yolk of egg, one ounce.

Fowler's solution of arsenic, forty-four minims.

Syrup, two drachms.

Pure water, four ounces. Mix.

Dose—One teaspoonful three times a day, immediately after meals.

### ANTHELMINTICS. (p. 383.)

#### 4. Santonin.

Take

Santonin, three grains.

Compound scammony powder, three grains.

Calomel, one grain.

Mix.

The powder to be taken as directed at page 306.

Santonin is a specific for round-worms.

#### 5. Pomegranate.

Take of fresh-sliced pomegranate root-bark, two ounces. Of water, two pints. Boil down to one pint and strain. Of this, one to two tablespoonfuls should be taken fasting, early in the morning, and repeated every half-hour until four doses have been taken. An aperient should be given subsequently—castor oil being the most suitable. The worm will probably be expelled in about twelve hours (*vide p. 307*).

## 6. Male fern.

Take

Liquid extract of male fern, thirty minims.

Essence of ginger, twenty drops.

Syrup, two drachms.

Water to half an ounce. Mix.

The draught to be taken as directed at p. 307. (For children of two years and upwards.)

ANTISPASMODICS, SEDATIVES,  
AND CARMINATIVES. (p. 383.)

## 7. Stimulant antispasmodic.

Take (a)

Spirits of ether, forty minims.

Spirits of chloroform, forty minims.

Compound tincture of cardamoms, two drachms.

Spirits of nutmeg, half a drachm.

Oil of caraways, three minims.

Peppermint water, four and a half ounces. Mix.

Dose—One or two teaspoonfuls every three hours, for a child two years old, in colic, flatulency, and spasm (Tanner). *This should be kept ready made up.*

Or (b),

(in the absence of the above)

Take

Bicarbonate of soda, twelve grains.

Sal volatile, fifteen minims.

Glycerine, forty minims.

Peppermint water to one ounce.

Mix.

A small teaspoonful as often as necessary (for an infant).

## 8. Chloral sedative.

Take

Hydrate of chloral, six grains.

Tincture of belladonna, four minims.

Glycerine, two drachms.

Water, two drachms. Mix.

One drachm for a dose for an infant. Two for a child of one year.

Or,

Keep one ounce of a syrup of chloral, prepared by a chemist, strength  $1\frac{1}{2}$  grain to each drachm, in stock. Dose—as above.

Or,

To each teaspoonful of the bromide mixture (9), add one grain of chloral (that is, eight grains to the whole).

## 9. Bromide of potassium.

To be of any service as a sedative, this medicine must be used in large doses. At least ten grains should be given every three hours to a child three years old if it is desired to ward off convulsions.

The following is a useful formula:—

Take of

Bromide of potassium, twenty-four grains.

Glycerine, two drachms.

Water, to one ounce.

Dose—A teaspoonful every second hour for an infant. (Half a drop to one drop of tincture of belladonna per dose is a good addition.)

## 10. Aromatic waters.

## (a) Caraway seed Water.

“A perfectly useful caraway water may be made in the nursery by boiling two teaspoonfuls of crushed caraway seeds, enclosed in a little muslin bag, in a pint of water, until the quantity is reduced to one half” (E. Smith).

## (b) Dill water.

A useful dill water for the nursery in the absence of the distilled preparation, as obtainable from the chemist, may be made as follows:—

Take of Indian dill seeds (Soyah or shulpha of the bazaars), three drachms.

Hot water, half a pint.

Infuse till cold and then strain.

Dose—A dessertspoonful slightly sweetened with sugar.

Its efficacy is often much increased by the addition of a teaspoonful of lime water (Waring).

#### APPLICATIONS. (p. 380.)

##### 11. Dusting powder.

Take

Oxide of zinc, one part.

Powdered starch, three parts.

Mix thoroughly in a mortar (p. 385).

##### 12. Soap liniment (a substitute for opodeldoc).

Take

Soft soap, two ounces.

Boiling water, one pint.

Dissolve thoroughly.

##### 13. Cold lotion.

Take

Nitre, two ounces.

Sal ammoniac, two ounces.

Water, a quart. Mix.

An excellent application for inflamed bruises, or for the head in fever.

Or,

Take of vinegar, brandy, and water, equal parts, and mix.

Or,

Sal ammoniac, one and a half drachm.

Methylated spirits, six drachms.

Water to six ounces. Mix.

Note—Nitre, nitrate of potash, or saltpetre is called “*shora*” in Hindustani. Sal ammoniac, or chloride of ammonium, is known in the bazaar as “*nowsadar*.”

##### 14. Arnica lotion.

Take

Tincture of arnica, six drachms.

Rain water, eight ounces. Mix.

To be used as a lotion for sprains and bruises (p. 352).

##### 15. Borax application.

Take

Borax, half a drachm.

Glycerine, one drachm.

Water, one ounce.

Applied to the throat in thrush, this is a specific.

##### 16. Ringworm ointment.

Take

Chrysophanic acid, ten grains.

Lard or vaseline, one ounce.

Rub well together.

##### 17. Zinc ointment.

Take

Oxide of zinc, eighty grains.

Fresh lard, one ounce.

Rub together.

##### 18. Stimulating liniments.

A useful *camphor liniment* may be made by dissolving one ounce of camphor in sixounces of cocoa-nut or any other bland oil.

Or,

For a good *turpentine liniment*

Take

Camphor, one part.

Turpentine, sixteen parts.

Soft soap, two parts.

Rub together till thoroughly mixed.

##### 19. Galls ointment.

Take

Galls (mai-phal of bazaars) powdered, one and a half drachm.

Ghee, one ounce. Mix.  
Very useful in piles and protrusion of the bowel.

20. Itch ointment.  
Take  
Sulphur, one ounce.  
Lard, four ounces.  
Rub together.

21. Resin ointment.  
Take  
White damar (sufèd damar), five ounces.  
Lard or kokum butter, eight ounces.  
Wax, two ounces.  
Melt with a gentle heat, stirring briskly as it cools (Waring).

22. Turpentine ointment.  
Take  
Turpentine, one ounce.  
White or black damar, sixty grains.  
Yellow wax and lard, half an ounce.  
Melt well together, stirring it while cooling.  
An excellent application for indolent and ill-conditioned ulcers (Waring).

23. Eye lotion.  
Take  
Alum, twelve grains.  
Sulphate of zinc, six grains.  
Infusion of poppy-heads, six ounces.  
Mix.  
To be used constantly.

24. Carbolic lotion.  
Take  
Carbolic acid (rendered fluid by a gentle heat if it be solid), one part.  
Luke-warm water, sixty to eighty parts.  
Shake well together.

25. Carbolic oil.  
Take  
Carbolic acid (fluid) one part.  
Any bland oil slightly heated, twelve parts.  
Shake thoroughly.

26. Glycerine of tannic acid.  
Take  
Tannic acid, one drachm.  
Glycerine, four drachms.  
Mix.

27. Iodine.  
The ointment is useful for the dispersion of swellings, and in cases of enlargement of the spleen.  
Iodine paint is also supplied by the chemist. It should be painted over swellings of the glands, when acute inflammation has subsided, by means of a camel's-hair pencil, night and morning. If the child be very young, the paint should be diluted with brandy.

28. Aloes liniment.  
Take  
Tincture of aloes, half an ounce.  
Soap liniment, one ounce. Mix.  
To be rubbed daily for five minutes into the belly. Should not be employed in the case of a child under two years of age.

ASTRINGENTS. (p. 384.)

29. Simple aromatic astringent.  
Take  
Aromatic chalk powder, thirty grains.  
Tincture of catechu, one drachm.  
Mucilage, two drachms.  
Peppermint water to one ounce. Mix.

Dose—Half a teaspoonful three or four times a day under six months of age; one to two teaspoonfuls between twelve and twenty-four months. Very useful in simple diarrhoea.

Or,

Take  
Aromatic chalk powder, thirty grains.  
Bicarbonate of soda, eighteen grains.  
Acacia powder, ten grains.

Tincture of catechu, one drachm.

Syrup of ginger, one drachm.

Peppermint water, six drachms. Mix.

Dose—One teaspoonful every three or four hours till relaxation ceases.

For a child of one year.

Or,

(if dependent upon the Bazaar)

Take

Catechu powder, four grains.

Cinnamon powdered, four grains.  
Mix.

The powder to be taken three times a day.

Or,

Bruised catechu, three drachms.

Bruised cinnamon, one drachm.

Boiling water, half a pint.

Macerate for two hours and strain.

Dose—One dessertspoonful to a tablespoonful three times a day.

### 30. Gallic acid.

Take

Gallic acid, one drachm.

Mucilage, half an ounce.

Water, two ounces. Mix.

Dose—One teaspoonful after every watery motion.

### 31. Bismuth and opium.

Take

Bismuth, thirty grains.

Bicarbonate of soda, twelve grains.

Compound powder of chalk with opium, twelve grains.

Mix thoroughly, and divide into six equal powders.

*Caution.*—Each powder contains one-twentieth of a grain of opium. Therefore this prescription should not be used for children under six months of age, and not more than one powder should be given to a child under nine months in the course of twenty-four hours. Two in the twenty-four hours should not be given till a full year of age has been completed, and so on, two powders for each year of age being allowable.

This medicine may be used in conjunction with any pure astringent.

### 32. Acid astringent.

Take

Diluted sulphuric acid, eighteen drops.

Tincture of catechu, thirty-six drops.

Syrup of ginger, two drachms.

Water, nine drachms. Mix.

Take two teaspoonfuls every fourth hour.

If the tincture of catechu be not at hand, gallic acid, twelve grains, may be substituted; or the solid catechu, eighteen grains, if it can be obtained tolerably pure.

Or,

Take

Diluted nitric acid, sixteen minims.

Laudanum, four minims.

Tincture of capsicum, two minims.

Tincture of ginger, sixteen minims.

Glycerine, enough to sweeten.

Water to one ounce.

One drachm three times a day, or even four times in twenty-four hours to a child a year old.

Half the quantity for a child of six months will frequently succeed where ordinary astringents have failed.

## 33. Alterative astringent.

Bael fruit (the half-ripe fruit, if procurable, is best; but the dried fruit also answers) is a very valuable remedy in cases of diarrhoea and dysentery when febrile symptoms have subsided.

Take of the soft gummy interior, two ounces. Mix with three or four ounces of water; sweeten to the taste. Take one-fourth part twice or three times a day. (Caution, see p. 334).

## 34. Oxide of Zinc.

Take

Oxide of zinc, sixteen grains.

Glycerine, three drachms.

Mucilage, half an ounce.

Water to two ounces. Mix.

A teaspoonful three or four times a day for a young infant. The quantity of zinc may be doubled for a child of one year.

## 35. Cold.

Ice broken into small pieces, and put into a bladder, applied to the head in cases of fever with headache, or of inflammation of the brain, is a valuable remedy. It may also be used in lumps or pulverised, to prevent bleeding from wounds, or to moderate swellings and inflammations.

Or,

The freezing mixture,

Consisting of five ounces of sal ammoniac, five ounces of saltpectre, and ten ounces of water mixed together and enclosed in a bag, will cause the thermometer to sink from 50° to 10°.

## DAPHORETICS, OR FEVER MEDICINES. (p. 385.)

## 36. Sweating mixture.

Take

Nitrate of potash, ten grains.

Ipecacuanha wine, two drachms.

Syrup, two drachms.

Barley water, two ounces. Mix.

Dose—One teaspoonful every second or third hour, for a child under six months of age. Two teaspoonfuls up to twelve months. A dessertspoonful beyond this age, up to the second year, after which a tablespoonful may be given in common colds and fevers.

## 37. Antipyrin. (p. 166.)

## 38. Fever mixture.

Take

Solution of acetate or citrate of ammonia, half an ounce.

Nitrate of potash, twenty grains.

Sweet spirits of nitre, one drachm.

Syrup, three drachms.

Water, three ounces. Mix.

Dose—Same as No. 36.

## EMETICS. (p. 386.)

## 39. Simple emetic.

Take

Ipecacuanha powder, one grain.

Sugar, three or four grains. Mix.

This powder may be given to the youngest infant every quarter of an hour, till vomiting results.

Or,

Country ipecacuanha (anta-mul of the bazaar), the powdered dry leaves, of which three or four grains will cause vomiting. In larger doses it may be substituted for ipecacuanha in treating dysentery.

Or,

Alum may be used in the absence of ipecacuanha. Three drachms should be dissolved in one ounce of syrup. Of this one-third part may be given every quarter of an hour or ten minutes.

#### 40. Stimulating emetic.

Take

Ipecacuanha powder, eight grains. Ipecacuanha wine, one ounce. Mix.

Dose — One teaspoonful every quarter of an hour, till vomiting is produced.

#### 41. Powerful emetic.

Take

Sulphate of copper, two to six grains. Water, half an ounce. Dissolve.

One quarter part every ten minutes in rice water till vomiting occurs. Useful in the third stage of croup, after one year of age.

Or,

Sulphate of zinc (see p. 387).

#### 42. Mudar. (p. 388.)

Is a good substitute for ipecacuanha in the treatment of dysentery. If not given with the usual precautions, it will cause vomiting. The dose and mode of administration are the same as of ipecacuanha.

#### ENEMATA. (p. 388.)

#### 43. Worm injection.

Take

Table salt, one to two teaspoonfuls. Olive oil, half an ounce. Conjee water, three ounces. Mix. Useful for killing and expelling thread-worms.

#### 44. Purgative enema.

Take

Castor oil, two drachms.

Thin warm gruel, three ounces. Mix. Useful in ordinary constipation.

Or,

Aloes, ten to twenty grains.

Boiled milk, three ounces. Mix. Useful when castor oil is insufficient.

#### 45. Purgative and antispasmodic enema.

Take of

Castor oil, two drachms.

Turpentine, two drachms.

Tincture of assafetida, half a drachm.

Rice water, three ounces. Mix.

Very useful in convulsions.

#### EXPECTORANTS. (p. 389.)

#### 46. Sedative and expectorant.

Take of

Spirits of nitric ether, one drachm. Compound tincture of camphor, thirty-six minims.

Ipecacuanha wine, twenty-four minims.

Syrup, three drachms.

Water, one and a half ounce. Mix.

Dose — One teaspoonful every fourth hour.

*Caution.*—This mixture contains a little more than one-eighth part of a grain of opium.

#### 47. Stimulating expectorants.

Take of

(1) Carbonate of ammonia, eight grains.

Ipecacuanha wine, one drachm.

Tincture of sencga, two drachms.

Oxymel of squills, three drachms.

Water, three ounces. Mix.

Dose — One teaspoonful every second hour for an infant under one year of age. Double this quantity for between one and two years. A dessertspoonful after the latter age. Useful in the obstinate coughs of weakly children.

Or,

(2) Ipecacuanha wine, thirty-six minims.

Carbonate of ammonia, five grains.

Syrup, two drachms.

Water, ten drachms. Mix.

Dose — Two teaspoonfuls every fourth hour, for a child of two years.

Or,

(3) Carbonate of ammonia, twelve grains.

Tincture of squills, seventy-two minims.

Chloric ether, forty-eight minims.

Tincture of tolu, half an ounce.

Water, three ounces. Mix.

Dose — Two teaspoonfuls every third or fourth hour.

### PURGATIVES. (p. 390).

#### 48. Castor oil.

Dose — Half a teaspoonful for a child under one year of age. A full teaspoonful is sufficient for a child of any age.

#### 49. Red mixture.

Take of

Rhubarb, ten grains.

Carbonate of magnesia, thirty grains.

Sal volatile, half a drachm.

Aniseed oil, two drops.

Water, two ounces. Mix.

Dose — A teaspoonful, repeated every fourth hour till it operates.

#### 50. Gregory's powders.

Take of

Rhubarb, two drachms.

Magnesia, six drachms.

Ginger, one drachm. Mix thoroughly, and pass through a fine sieve.

Dose — Five to twenty grains.

#### 51. Castor oil emulsion.

Take of

Powdered acacia, three drachms.

Powdered loaf sugar, three drachms.

Oil of peppermint, two drops.

Castor oil, one ounce.

Rub the acacia, sugar, and oil of peppermint together into a powder; add about six drachms of water; then add the castor oil by degrees, with a little more gum or a little more water, as may be necessary to make a perfect emulsion. Then add water slowly to bring the quantity to four ounces. Of this mixture one tablespoonful equals one teaspoonful of castor oil, and a teaspoonful equals fifteen drops.

Dose — As an aperient, one tablespoonful. For inflammatory diarrhoea, half to a whole teaspoonful every fourth or sixth hour.

Or,

Castor oil, one drachm.

Gum acacia, twenty grains.

Syrup, two drachms.

Caraway water to one ounce.

Dose — One drachm (equal seven and a half drops) every fourth hour, or oftener.

#### 52. Senna.

Take of

Senna leaves, one ounce.

Bruised ginger, half a drachm.

Bruised cloves, half a drachm.

Boiling water, ten ounces.

Stand for half an hour.

Dose—For a child of two years, one teaspoonful. The simple infusion without the aromatics may be given with sugar and milk, when it can hardly be distinguished from ordinary tea.

### 53. Salts and senna.

Take of

Sulphate of magnesia, one drachm.

Infusion of senna, one ounce.

The draught, to be taken by a child of ten or twelve.

### 54. Epsom salts draught.

Take of

Sulphate of magnesia, twenty grains.

Syrup of ginger, one drachm.

Peppermint water, three drachms.

The draught, for a child above a year old.

### 55. Continuous purgation.

Take of

Sulphate of magnesia, two drachms.

Nitrate of potash, twenty grains.

Syrup, half an ounce.

Water, one ounce. Mix.

Dose—Two teaspoonfuls twice or three times a day, when it is desired to keep up purgation, as in head affections.

### 56. Strong purgatives.

Take of

Calomel, one grain.

Jalap, five grains.

Powdered ginger, two grains. Mix.

The powder, suitable for a child of eight or ten years. This should be followed by a dose of senna or Epsom salts in a few hours.

Or,

Take of

Compound powder of scammony, two grains.

Calomel, half a grain.

The powder, for a child of one year.

### 57. Podophyllin.

Take of

Podophyllin, one grain.

Alcohol, one drachm. Dissolve.

Dose—Five to ten drops in syrup twice or three times a day.

### 58. Aloes.

Take of

Powdered aloes, one drachm.

Syrup, one ounce. Mix.

Dose—One teaspoonful every third hour till a satisfactory result be obtained.

Or,

By adding to the above, sulphate of iron, four grains, a mixture is formed which is most valuable in some form of constipation (p. 272).

### 59. Other purgatives.

Other useful and portable aperients are—

(a) The compound liquorice powder of the German pharmacopoeia, of which five to ten grains or more, mixed with milk, taken early in the morning is a mild and agreeable laxative.

(b) The liquid extract of cascara, dose two to four drops twice a day.

## REFRIGERANTS. (p. 391.)

## 60. Lemonade.

Five or six limes sliced, added to one pint of boiling water. Allowed to stand till cool, then strained and sweetened to taste.

Or,

Tamarinds, one ounce.  
Water, one pint.

Make an excellent cooling drink, but it must be recollect that it possesses aperient properties.

## 61. Seidlitz powder for children.

Take of

Bicarbonate of soda, ten grains.  
Tartrated soda, thirty grains.

Dissolve in one ounce of water, adding a little syrup and essence of lemon. Then in another glass dissolve eight grains of tartaric acid in one tablespoonful of water. The contents of the glasses should be poured together, and the whole drank while effervesing. An agreeable, mild aperient in the warm weather for strong children, but it is not one which should be frequently used.

## 62. Effervescing draughts.

Take of

Bicarbonate of potash, one drachm. Water, sweetened and flavoured with syrup of lemon, three ounces. Mix, and put into a bottle; then dissolve forty-two grains of citric acid in three ounces of water in another bottle.

On tablespoonful of each thrown together will form a refreshing draught.

## 63. (a) Fever drink.

Nitrate of potash (nitre), ten grains.  
Barley water, one pint.

A wineglassful occasionally to quench thirst.

## (b) Fever drink.

Take of

Chlorate of potash, thirty grains.  
Rice water, one pint. Mix.

A wineglassful to be taken from time to time to quench thirst.

## STIMULANTS. (p. 391.)

## 64.

Take of

Diluted hydrochloric acid, sixteen minimis.

Spirits of chloroform, sixteen minimis.  
Camphor water, one ounce. Mix.

Dose—One teaspoonful every two or three hours.

## 65.

Take of

Carbonate of ammonia, twelve grains.  
Chloric ether, half a drachm.

Infusion of cloves, four ounces. Mix.

Dose—One drachm to a dessert-spoonful three times a day.

## TONICS. (392.)

## 66. Quinine tonic.

Take of

Quinine, four grains.

Lime juice, twenty drops (or four drops of diluted sulphuric acid).

Infusion of orange peel, two ounces.  
Mix.

Dose—One to two teaspoonfuls three times a day, shortly before food.

## 67. Antiperiodic.

Take of

Quinine, twenty grains.

Lime juice, one teaspoonful (or twenty drops of diluted sulphuric acid).

Syrup, two drachms.

Water to one ounce. Mix.

Dose—One eighth part for a child a year old. Double that quantity for a child of two years. Strong doses of quinine should, as far as possible, not be given on an empty stomach. (See p. 192.)

### 68. Steel and quinine tonic.

Take of

Tincture of steel, twenty-four drops.

Quinine, four grains.

Water, one ounce. Mix.

Dose—One teaspoonful three times a day after meals, for a child of two years.

Or,

Citrate of iron and quinine.

Dose—One to two grains.

### 69. Chiretta.

(a) Wine.

Take of

Bruised chiretta, two ounces.

Sherry wine, one bottle.

Allow to stand for a week.

Dose—One to two teaspoonfuls twice or three times a day.

(b) Infusion.

Take of

Bruised chiretta, one ounce.

Cold water, one pint.

Bruised cloves or cinnamon, one drachm.

Infuse for six hours and strain.

Dose—A dessertspoonful to a tablespoonful twice or three times a day, before food.

### 70. Aperient tonic.

Take of

Tincture of steel, one drachm.

Epsom salts, one drachm.

Quinine, six grains.

Water, six ounces. Mix.

Dose—One tablespoonful three times a day for a child of from six to eight.

A valuable tonic in the dropsy following malarial poisoning, when there is also a tendency to constipation.

Or,

Epsom salts, forty grains.

Diluted sulphuric acid, sixteen minims.

Sulphate of iron, four grains.

Syrup of ginger, half drachm.

Peppermint water, to two ounces.

Mix.

Dose—One drachm for a child a year old.

### 71.

Take of

Syrup of iodide of iron, ten to thirty minims,

Cod liver oil, half a drachm.

To be given three times a day, after food.

Or,

The syrup of iodido of iron may be given alone.

Or,

The syrup of the phosphate of iron, twenty to thirty drops three times a day, after meals.

Or,

Wine of iron (made by mixing one drachm of citrato of iron and ammonia, with an ounce of rectified spirits of wine and seven ounces of water). Dose—One drachm and upwards.

Or,

Parrish's chemical food, a quarter, half, or a full teaspoonful in as much water, to children of two, five, and ten, responsibility.

## 72. Country sarsaparilla.

Take of

Hemidesmus root (called in the bazaar Hindi-Sal-sa or jungli chaubelli), bruised, one ounce.  
Boiling water, half a pint.

Infuse in a covered vessel for half an hour and strain.

Dose—One to three tablespoonfuls three times a day. The efficacy of the medicine is much increased by taking it when warm. Sugar and milk added to it make it so like tea that children will readily take it. Waring says it is a "particularly

useful tonic for the pale weakly offspring of Europeans in India."

## 73. Cod-liver oil.

For mode of administration, *see* page 393.

## 74. Pepsine.

The dose of the wine is a quarter to half a teaspoonful given with meals.

Of the powder, half a grain to two grains given in water with a drop of hydrochloric acid, three times a day with meals.

## TABLE OF WEIGHTS AND MEASURES.

## SOLID MEASURE.

				Marked thus.
20 grains*	make	...	...	one scruple ʒj
3 scruples ,,		...	...	one drachm ʒj
8 drachms ,,		...	...	one ounce ʒj
12 ounces ,,		...	...	one pound lbj

## FLUID MEASURE.

60 drops or minims make 1 drachm, equal to one ordinary-sized teaspoonful.

8 drachms make one ounce, equal to two ordinary-sized tablespoonfuls.

20 fluid ounces make 1 pint, and eight pints equal one gallon.

\* The grain weights are usually marked with dots corresponding to their numbers, thus: | 0 | 0 | 0 &c., &c.

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